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Addresses

THE RELATION OF THE HOSPITAL TO MEDICAL EDUCATION AND RESEARCH.*

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The most urgent need of the medical schools of this country at the present time is the possession of well organized and well equipped hospitals, available for teaching, and I esteem it a great privilege to bring greetings and congratulations to the Jefferson Medical College on this splendid addition to its educational resources. Coming, as so many of us do, directly from the meeting of the American Medical Association in Atlantic City, my colleagues, representing the medical profession of this country, will surely be glad to have me express on this happy occasion in their behalf congratulations to this college and to this city. We must all rejoice in the enlarged opportunities for bedside teaching supplied by this fine hospital to the Jefferson Medical College, which from its foundation over eighty years ago has laid especial emphasis on clinical instruction, which has sent forth so many graduates who have achieved professional success and eminence, and which has possessed such distinguished teachers and ornaments of our profession as McClellan, Eberle, Dunglison, Bache, Drake, Meigs, J. K. Mitchell, Dickson, Pancoast, Mütter, the Grosses, Brinton, Da Costa, whose worthy, living successors will not deem it invidious if I add to this incomplete list the name of that leader of American surgery, their absent colleague, Keen, who, resting from his many years of brilliant and successful work in behalf of this college, will in a distant land be glad with us to-day.

The Jefferson Medical College is indeed singularly fortunate in the possession of this large general hospital, admirable in construction and arrangement, entirely under the administration of a single board of trustees common to the college and the hospital, who control all of the appointments to the hospital staff and who in serving the best interests of the patients are in the fullest sympathy with the needs of medical education and active in its promotion. It is precisely the lack of hospitals under the control of our medical schools which constitutes one of the most serious obstacles in the development of medical education in this country, and all interested in the advancement of medical science and teaching in America have reason to be grateful to the State of Pennsylvania and the private benefactors whose enlightened generosity has made possible this enviable possession of the Jefferson Medical College.

* Address at the opening of the new Jefferson Medical College Hospital, June 7, 1907.

The theme of my remarks on this occasion—the relation of the hospital to medical education and medical research—is naturally suggested by the event which we are assembled to celebrate.

The discussion of the problems of clinical teaching and investigation by one engaged in laboratory work, although actively interested in all that pertains to the advancement of medical education, may have the advantage, so useful to a speaker, of a certain detachment of view, of length, if not clearness, of perspective, and of the absence of too disturbing a consciousness of all the difficulties inherent in the working out of details.

It would be interesting to trace the evolution of methods of clinical instruction from their inception, or rather revival, in Padua by Montanus about the middle of the sixteenth century to the present time. We should follow the conveyance of these methods by the elder van Heurne toward the end of the sixteenth century from Padua to Leyden, where in the course of a century they reached the high development attained under the great Boerhaave, *communis Europæ preceptor,* and whence influences, spreading in the eighteenth century first to Göttingen, Halle, Vienna, and Edinburgh, can be traced continuously down to this very day and to the medical schools of America. But such a historical survey, hitherto imperfectly drawn, is a theme by itself, which I must forego, although commending it as an attractive one to medical historians.

While the early history of medical education in this country is a story of feeble resources, but still of high endeavor and of just appreciation of the requirements of training for a learned profession, we can not contemplate with similar satisfaction and pride the deplorable period which followed through many years of lowered standards of preliminary education, of shortened courses, and of faulty arrangement of the curriculum. Nevertheless, these unfortunate conditions, attributable mainly to the circumstances of rapid, pioneer development of the country and to the absence of any responsible supervision outside of the medical schools, were saved from giving results as bad as they are often depicted and as the system seemed to demand by a measure of practical, clinical instruction, by the high character and gifts of many of the teachers, and by the preservation of sound traditions of the physician's calling.

Nothing is more remarkable in the history of medical education in this country than the rapidity with which our better schools have emerged in the last two decades from this low state. Especially noteworthy during this period is the development in these schools of laboratory teaching from the weakest to the strongest position in the curriculum, with the corresponding and most gratifying growth in this country of the sciences of anatomy, physiology, pathology, biologic chemistry, pharmacology and bacteriology. Hygiene, unfortunately, has lagged

behind, mainly, I believe, through lack of careers for trained hygienists in this country, especially on our boards of health.

The introduction and development of laboratory teaching has had a profound influence on our ideas of methods of medical education. In the laboratory knowledge is acquired not by reading or being told about things or even by seeing them demonstrated by another, but by immediate contact with the object of study, by power to use technical instruments and procedures, and by personal observation and experiment. A final adjustment has not yet been reached between this practical method of acquiring knowledge and the older didactic or expository method, to which within proper restraints I am not unfriendly, but the days of dominance of didactic teaching in our medical schools are numbered.

A pertinent inquiry in this connection is whether improvement in the teaching of medicine and surgery has kept pace with that of the laboratory subjects. Improvement in the former there has been, but it is, nevertheless, true that the so-called theoretical subjects are to-day taught most practically and the so-called practical branches most theoretically. It is above all familiarity with the methods and results of teaching in the laboratory which has emphasized this contrast and has indicated directions of improvement. Such contrasts, however, as those implied in the distinctions so commonly drawn between theoretical or scientific subjects on the one hand and practical subjects on the other in the medical curriculum, and between the methods of teaching in the laboratory and those of teaching in the hospital are unfortunate and not inherent in the nature of the subjects. Both classes of subjects are practical in that they admit of application to practical use and in that their common aim is to serve the training of practitioners, and both are scientific in that they rest on and are furthered by co-ordinated knowledge gained by systematic observation, experiment and reasoning. The justification for the presence of any obligatory subject in the medical curriculum and for the amount of time devoted to it is its importance for the training of sound practitioners of medicine and surgery. Nor should there be any difference in the general principles underlying the methods of teaching the laboratory subjects and those of teaching the clinical branches. For the latter the hospital is the laboratory where the results of Nature's experiments are to be studied and alleviated by the methods of science.

Training in the laboratories in the early years of the medical course should be a preparation for the final work in the hospital where the ultimate goal of medical education is approached—the ability to interpret and to forecast, and the power to prevent, to remove or to relieve the manifestations of disease and injury. Important as clinical teaching must have been even in the relatively undeveloped state of medicine and surgery in past centuries, it is vastly more important in these days of accumulated medical knowledge and experience, of refined methods of diagnosis by physical examination and by a multitude of technical procedures, and of improved methods of medical and surgical treatment.

Do the methods of teaching the clinical subjects generally adopted in our medical schools at the present time bring the student sufficiently into that intimate, prolonged, personal contact with the object of study, in this case the living patient, which secures that abiding, vital, useful knowledge, the possession of which alone is power for good, and the lack of which is helplessness and even power for harm? As I have intimated, I believe that the clinic falls behind the laboratory in this regard, and that the greatest strength of the curriculum is not where it should lie.

It is not many years since practically the sole method of clinical teaching in the medical schools of this country was the amphitheater clinic. Not a word need be said against the value of this important form of clinical instruction, but no argument is needed to show that by itself it does not suffice for the practical training of students in the science and art of medicine.

A distinct advance was marked by the introduction in recent years of the system of ward classes, by which students in groups are admitted to the hospital wards and given opportunities to examine patients and to receive personal instruction. It is not necessary for my present purpose to discuss the various forms of these ward classes or the methods of conducting them, or similar classes for practical, clinical instruction, or to point out in detail their great value to the student, which is universally recognized.

Neither the amphitheater clinic nor the ward class meeting under an instructor at stated hours and for short periods of time, useful as they are, represents the full ideal of the laboratory method of teaching. They correspond rather to demonstrative courses, which have their own place and value. Such courses alone would represent the attempt to teach a subject like bacteriology by demonstrations of methods, cultures and microscopic slides instead of having the student make his own media, plant and cultivate the bacteria by his own hands, and follow and study from day to day with his own eyes the characters of the growing organisms. It is only by the latter method that bacteriologists are made and it is only by a similar method that capable practitioners of medicine and surgery can be made, and if this essential training is not at least begun in the undergraduate days in the medical school, it must be secured, if at all, later, often under disadvantageous circumstances and at great cost both to patient and to physician.

This kind of clinical training means practical work in the dispensary and especially that students in their final year of study have patients assigned to them in the public wards of the hospital, where under proper restrictions they can freely come and go, that they take histories, make necessary examinations for diagnosis, follow the course of disease from day to day and become familiar with methods and results of treatment, all of this work being, of course, under competent supervision and undertaken only after suitable preliminary studies. Privileges and opportunities for practical training of the kind indicated are at present enjoyed in most of our hospitals only by the fortunate internes, but the system is familiar in Great Britain as that of clinical clerks and surgical dressers, and in Germany as that of *Praktikanten*, hospital service in this capacity being a requirement in these countries for admission to examinations for the license to practice. The system has been in successful operation at the Johns Hopkins Hospital since the opening of the medical school.

It should be emphasized that the system, unlike that of ward classes, constitutes a part of the regular, orderly machinery of the hospital, that the students do work important for the the interests of the patient and which, if not done by them, would have to be done by others. How important this kind of clinical training is deemed

by that country which has long held the leadership of medical science is indicated by the recent addition in Germany to the formerly required period of study of the so-called practical year of continuous service in a hospital before the student is eligible for the license to practice.

I believe that it is incumbent on our medical schools and public hospitals to furnish students with opportunities for the kind of clinical training which I have briefly sketched and have indicated as comparable to the laboratory method of teaching. Let us briefly consider what objections can be urged against this method of clinical training and what obstacles stand in the way of its general adoption in this country.

The difficulties are not to be sought primarily in the lack of desire or willingness on the part of medical schools to advance along these lines of improved clinical teaching. It may be that the advantages of the newer methods are not so widely and fully appreciated as is to be desired, but the leaders and especially the younger generation of clinical teachers are alive to the importance of reform.

The difficulties and objections come from that other essential arm of medical education—the hospitals. Under the prevailing system of medical education in this country the most valuable asset of a medical school is the possession of an endowed, good general hospital, the appointments to which are controlled by the school and a main purpose of which is to serve the interests of medical education, while serving the best interests of the patients. There are few hospitals which stand in this relation to a medical school and of these still fewer capable of furnishing the requisite clinical opportunities, for it is self-evident that the system of ward-work which I have outlined is practicable only when the ratio between the number of patients and the number of students does not fall below certain limits.

Most of our schools must look to outside public hospitals to aid them in this most important part of the training of medical students, and the appeal of the schools and the students, an appeal which should be supported by the entire medical profession, is one which should receive the most careful consideration from the trustees of these hospitals. The source of the appeal should be heeded. Our medical charities could not exist without the free gift of their services by physicians, and the mere pecuniary value of these services, amounting annually to many millions of dollars, exceeds that of all the funds contributed to their endowment. The welfare of the community is vitally concerned with the supply of well trained physicians, never so much so as to-day when the power to relieve suffering and to check the incalculable waste to society from preventable disease has been greatly increased and is constantly growing. If the public wants good doctors it must help to make them.

A hospital which includes, as most public hospitals do, among its recognized legitimate functions not only the care of the poor sick, but also the training of physicians and nurses and the advancement and dissemination of medical knowledge adds no function which is new in principle when it admits advanced undergraduate students to work in its wards, while by so doing it greatly increases its usefulness and service to the community, and I believe also to the patients. There is no very material difference between the qualifications of these advanced students to undertake this work and the qualifications of internes when first admitted to the hospital staff. The introduction of these students into the hospital in accordance with the plan of ward work recommended interferes in no way with the orderly discipline and quiet of the wards.

The objection concerning which the greatest misapprehension exists and which doubtless weighs heaviest in the minds of managers of hospitals and of the lay public, unfamiliar with the actual facts, is the fear that harm will be done to the patients by permitting them to be examined by students. The primary purpose of the hospital is, of course, the care and treatment of the patients and the first duty of hospital trustees and physicians is to the patient. Nothing which prejudices the welfare of the patient can for a moment be permitted, and if it were true that the kind of clinical training which I am advocating inflicted any injury whatever on the patient, no other considerations could outweigh this objection.

The objection, however, is entirely unfounded. Every one acquainted with the conditions knows that our clinical teachers and the attending physicians and surgeons of hospitals are keenly solicitous for all that conduces to the comfort of their patients and makes for their recovery, every whit as much so for the poor as for the rich. They can be safely trusted to take every precaution to guard patients from harm and to imbue their students from the start with the same spirit of anxious solicitude for the welfare of the patients. A main purpose of the kind of clinical training under consideration is precisely to teach students when and how to examine patients, and I am informed by my clinical colleagues that students are, if anything, overcautious in their anxiety to refrain from any possibly injurious disturbance of the patient and that they carefully observe any directions which may be given regarding patients. Your own Dr. Keen in his admirable presidential address to the Congress of American Physicians and Surgeons on "The Duties and Responsibilities of the Trustees of Public Medical Institutions" expressed himself on this point of possible harm to the patient from bedside instruction in these forcible words:

> I speak after an experience of nearly forty years as a surgeon to a half-dozen hospitals and can confidently say that I have never known a single patient injured or his chances of recovery lessened by such teaching.

So far from being detrimental, the teaching of physicians and students is distinctly advantageous to a hospital and its patients. The teaching hospital is in general more influential, more widely useful and more productive in contributions to medical knowledge than a hospital not concerned with teaching. Such a hospital is more attractive to physicians and surgeons of distinction and, therefore, more likely to be able to attach such men to its attending staff, and thereby secure the best medical service. The stimulating influence of eager, alert students on the clinical teachers in hospitals has been so delightfully depicted by Dr. Keen in the address just cited, and which should be widely read by trustees and physicians, that I can not refrain from quoting his remarks on this point in full. He says:

> Moreover trustees may overlook one important advantage of a teaching hospital. Who will be least slovenly and careless in his duties, he who prescribes in the solitude of the sick chamber and operates with two or three assistants only, or he whose every movement is eagerly watched by hundreds of eyes, alert to detect every false step, the omission of an important clinical laboratory investigation, the neglect of the careful examination of the back as well as of the front of the chest, the failure to detect any important physical sign or

symptom? Who will be most certain to keep up with the progress of medical science, he who works alone with no one to discover his ignorance; or he who is surrounded by a lot of bright young fellows who have read the last *Lancet* or the newest *Annals of Surgery*, and can trip him up if he is not abreast of the times? I always feel at the Jefferson Hospital as if I were on the run with a pack of lively dogs at my heels. I can not afford to have the youngsters familiar with operations, means of investigation or newer methods of treatment of which I am ignorant. I must perforce study, read, catalogue and remember, or give place to others who will. Students are the best whip and spur I know.

There is no teacher who will not subscribe to these words of Dr. Keen.

It should furthermore be emphasized that the efficiency of the teaching hospital in its main function of treating diseased and injured patients is increased not only by securing the most skilful medical staff, by the constant stimulus of their interest and activity and by the spirit pervading the institution, but also by the participation of advanced students in the work of the dispensary and the wards in accordance with the system of clinical training which I am urging on your attention. When one considers all the time-consuming microscopic, chemical and physical tests applied in modern diagnosis and necessary to secure complete records of cases of disease, it can be readily understood that the increased force of those trained to make these examinations conduces to more accurate diagnosis, and to more satisfactory control of the progress of the patient from day to day, and therefore to better treatment. In advocating improved methods of clinical training and the introduction of such training more generally into public hospitals I plead and plead earnestly for the student, but I plead also for the hospital and the patient.

It is really lamentable to contemplate the immense clinical material which exists in the public hospitals of our large cities and which could be made available for the education of students and physicians and for the advancement of medical knowledge, but which is utilized for these purposes either not at all or very inadequately. Medical schools of these cities do not begin to secure the advantages of location which rightfully belong to them and they allow themselves to be outstripped by schools less favorably situated and the hospitals themselves are less useful than would otherwise be the case.

I am well aware of the practical difficulties in establishing the necessary relations with hospitals not already connected with medical schools. These difficulties, however, are not insurmountable if the trustees, teachers and medical staff sincerely desire their removal. The new order doubtless involves readjustment of existing conditions both in the schools and in the hospitals concerned. In many instances there will follow a considerable increase of the force of clinical teachers and a wider recognition of work done outside of the college walls and of the immediate direction of members of the faculty, a recognition, it may be, of something on the order of the Scottish extramural teaching or of the German privat-docent system, but adapted to our own special conditions. Careers will be opened to hospital physicians and surgeons, especially to young men, ready and fitted to teach but who now find the doors closed to them.

My remarks thus far have related mainly to the needs of undergraduate medical students and to methods of undergraduate clinical teaching. Education at best is only begun in the school, and the most the medical school can hope to do is to send its graduates forth fitted to begin their professional work and to continue their lifelong education with the greatest advantage to themselves and to others. I have on another occasion discussed the serious lack of opportunities in this country for the training of young men who aim at the higher careers in clinical medicine and surgery, and I contrasted these opportunities with similar ones now open in our laboratories for those who desire to become teachers, investigators or directors of laboratories of anatomy, physiology, pathology or other medical science. Training for the higher clinical careers requires a long apprenticeship after graduation from a medical school and after the ordinary hospital internship and is best secured by prolonged service in a hospital as resident physician or surgeon under conditions which secure more thorough practical experience and better opportunities for scientific study and investigation than those which now exist under the customary arrangement of the medical staff of our hospitals. I shall not now occupy time by renewed consideration of this aspect of my subject further than to state my belief that the reorganization of the resident and interne medical staff of the hospital indicated for this higher training of graduates of medicine is also that best adapted, if not essential, for the successful operation of the system of ward work for undergraduates which I have sketched and for the highest efficiency of the hospital.

A teaching hospital, such as the new Jefferson Medical College Hospital, will not be content solely with making the best possible provision for the treatment of injury and disease and for imparting knowledge, it will recognize as one of its most important functions also the increase of knowledge. Although I am approaching the end of the time allotted to this address, I can not pass this subject by without reference, albeit necessarily a hurried one.

For purposes of accurate diagnosis and treatment by modern methods a general hospital must nowadays be supplied with no small equipment for clinical laboratory examinations, and a good pathologic laboratory is now generally recognized as essential to such a hospital even in its routine work. Practical courses in the clinical laboratories are among the most valuable additions of recent years to the medical curriculum.

The problems of disease presented by living patients are the most difficult and complex in the whole range of the physical and natural sciences. Much light can be shed on them by investigations conducted in physiologic, chemical, pathologic, pharmacologic and bacteriologic laboratories, especially by experimentation on animals, but it is increasingly clear that the scientific study of many of these problems can be undertaken with the greatest advantage in well-equipped, special laboratories connected with the hospital clinics and in charge of investigators trained in chemical, physical and biologic methods, with convenient access to the material for study and in close touch with the clinicians. I may cite as good examples of such laboratories those of the university clinic in Munich under the direction of Professor Friedrich Müller.

The familiar analytical and statistical study of cases of disease, based on simple clinical observations, and first extensively and fruitfully applied by the great French clinicians of the early part of the last century, has been of immense service to medicine and will continue to be of service. A good clinical observation has precisely the same scientific value as a fact demon-

strated in the laboratory, and, even if more difficult of interpretation, is often the safer guide for the action of the physician.

It is, however, from the special clinical laboratories that we may reasonably hope for a more penetrating insight into the causes and nature of many diseases, an insight which perhaps may arm physicians with a saving power of prevention and treatment of some of the organic diseases of advancing life comparable to the inestimable gifts of bacteriologic laboratories to the prevention and treatment of infectious diseases. We must welcome the establishment of such laboratories and the new directions which they are giving to medical research. When the purposes of such laboratories are made clear, their foundation and support should make an especially strong appeal to public and private philanthropy.

The medical laboratories of whatever kind and the clinics, while each must cultivate its own special field, are fundamentally one domain, one in their scientific methods and spirit and one in their common purpose to advance medical knowledge and thereby bring healing to the nations.

In this great domain and with this high mission may the Jefferson Medical College and Hospital, with their past of honorable achievement and their future of larger opportunities, grow and prosper, serving skilfully the sick under their care, and blessed with wise counselors, with able and devoted teachers and contributors to medical science and art, with zealous students from far and near, and with loyal graduates—an institution standing in this community and throughout the land as a powerful influence for all that is best in our profession!

THE OLD JEFFERSON HOSPITAL.*

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We meet to-day to dignify with appropriate ceremonies an event of the first importance in the history of this school—an event long hoped for, long despaired of, but which has finally come to pass. The dream of a multitude of yesterdays is realized to-day, and this splendid new hospital is a monument, not to public vanity, not private gain, but to unselfish effort for humanity and science. Those who tracked the toilsome pathway, those who bore the heavy burden, may well be pardoned a feeling of exultation and a sense of triumph.

My first and most agreeable duty is to turn to the Hon. William Potter and his associates of the board of trustees, and, in the name of the great alumni of this school and of my colleagues of the faculty, tender our heartfelt and most grateful thanks.

This event is of the first importance to the Jefferson Medical College, but its influence is of far wider significance. It is of importance to medical science that a corps of the army of healing, a corps in the front of the battle against Death, has been strengthened and enthused. It is of economic importance to the city and the state. When a man is saved from death or rescued from sickness he returns to the support of a family which might otherwise be a public charge, and he becomes again an industrial unit, a factor in the production of wealth, a factor which adds its share to the power and greatness of the commonwealth. From the economic view alone, to say nothing of the humane aspect, it actually pays the state to aid hospitals financially. It particularly pays it to aid teaching hospitals, in which the lessons learned from a single sick or injured man may save valuable lives and cure hundreds in distant places. The event is also of importance to the diseased and hurt of the state and city, for more of them than formerly can come to us for help. The need of hospital accommodation is every year becoming more and more pressing. This is an age when dangerous occupations multiply. The streets are filled with rapidly-moving and death-dealing vehicles; every few stories of a great modern building mean one man dead and many injured; every twenty miles of railroad in the country mean a man killed, and every three miles mean a man injured, each year; great machine shops and factories crush and mutilate, and deadly electric currents are on all sides of us. Closely adjacent to the hospital are the slums, the inhabitants of which, when injured or diseased, know no resource but the hospital; the people of the slums pour into the wards and throng in the out-patient departments. The very situation of the building means a wealth of clinical material, because it is placed where it is most needed. In the slums the slime of humanity gathers; there plagues are ever lurking, ready to burst forth and overwhelm us; there is drunkenness; there is madness; there is pauperism; there is illegitimacy; there is "Vice with her naked talons;" there is "Crime with her dripping fangs." Truly the slum is the shadow of civilization itself, and in that shadow crawls every noisome reptile and springs every noxious plant. The slum is the interrogation to civilization; it is the problem that excites the anxious and apprehensive interest of the scientist, the philanthropist, the statesman and the philosopher; it is the Sphinx's riddle, and to fail to answer it means destruction.

We depart from the old hospital, and truly it is time we did; yet even in going to better quarters there is reminiscent regret at leaving the old home. We leave much besides a building that has outlived its highest usefulness. We leave memories of good work done, of progress inaugurated, of great men and of high achievements. In the arena of that building voices have spoken in tones so authoritative as to sound through this hemisphere and to echo beyond the sea, and the spirits of absent or departed great ones seem to stand beside me as I speak.

In that arena the Grosses and the elder Pancoast operated, and Bartholow and J. M. Da Costa taught. There spoke Levis, Parvin, Wallace, Biddle, Brinton, Maury and others. There, as guests, have stood Esmarch, of Kiel; Mikulicz, of Breslau; Faure, of Paris; Lorenz, of Vienna; Bryant, Durham, Horsley, Ballance and MacCormac, of London; Macewen, of Glasgow; Lawson Tait, of Birmingham; Annandale and Chien, of Edinburgh; Emmett, Weir and Thomas of New York; Senn, of Chicago; our own Marion-Sims, and a host of others. There, until yesterday, one fortunately still living was a tower of strength. I refer to our distinguished Emeritus Professor of Surgery, my well loved master, Keen. I find in these memories strength and inspiration, and I will hold them and cherish them as long as memory remains a portion of my intellect, and until my body becomes again a part of the dreamless dust.

Thirty years ago, in May, 1877, the hospital that we now leave was opened for patients. Our college was, I believe, the second institution in the country to have its

*Address at the opening of the new Jefferson Medical College Hospital, June 7, 1907.

own hospital for teaching purposes. When opened it was modern, well equipped, amply satisfactory, an ornament to the city and the pride of the school. In only thirty years it has become completely antiquated, so quickly do conditions change. Thirty years! A comparatively short time, if measured merely by the figures on the calendar, but an infinite period if estimated by multitudinous and revolutionary changes. Thirty years ago vivid chromos, the product of lithography, were immensely popular; they have entirely given place to really beautiful Christmas and New Year cards. Typesetters and compositors were not being pushed aside then by composing machines. Men wrote letters by laborious effort with pen and ink and did not have typewriters. The newspapers did not publish pictures, and the pictures in the magazines were wood cuts, not halftones. In the entire country there were only four establishments for making artificial ice; there are now over eight hundred. The preservation of food by canning was just beginning to become a great industry. Numbers of persons were reading Jules Verne's recently-published book, "Twenty Thousand Leagues under the Sea," but navigation under the water was then but a poet's dream; it is now realized in the submarine boat. The United States Navy was almost extinct, thanks to some of the ablest political engineers of destruction that ever wrought evil deeds. The Philippine Islands were known to but few in this country, and then only in connection with hemp and peculiar-looking cigars, and the man did not live that could forecast the message of progress that Dewey was to write in iron hail on the battlements of Manila, and out of which was to spring that new island empire in the very portals of the distant sunset. The United States Army numbered but twenty thousand men, some of whom were being used to carry elections in the southern states, and some of whom, under General Miles, were fighting Chief Joseph and his Nez Percés in Northern Montana. The small-caliber, long-range rifle and smokeless powder were unknown—the combination that has revolutionized warfare, made cavalry an almost insignificant arm of the service in actual battle and rendered the taking of fortified places by assault almost impossible to any except the "little brown men" of the land of the Mikado. The largest locomotive in general use weighed thirty-five tons; the latest type of freight engine built by the Baldwin Locomotive Works weighs over one hundred and fifty-two tons. Express trains, as a rule, ran at a rate of thirty miles an hour; they now run more than fifty, and often over sixty miles an hour for long distances. The largest ocean steamboat was under five hundred feet in length; the Baltic, of the present day, is seven hundred and twenty-six feet in length. The record passage across the Atlantic was over seven days; it is now under five days, seven hours. There was not a building in Philadelphia above eight stories in height; there are buildings now in the city twenty-three stories high. Yellow brick and terra cotta were seldom used in building, steel and cement were never employed, and our present Babylonian towers with ribs of steel would have seemed to the people of that day as marvelous as Aladdin's palace. There were no hansom cabs on the streets. The bicycle with the huge front wheel was just appearing, and twenty years were to pass before the advent of the automobile. Hand organs were of small size, and there were no huge breweries of din pushed about in carts or drawn around by dejected donkeys. The street cars were dragged slowly by bony and wretched horses. The public squares were enclosed with iron railings. The streets were paved with Belgian blocks and cobblestones. The wizard, Edison, was at Menlo Park, deep in perfecting the incandescent electric light and in inventing the phonograph. Our streets were illuminated by flickering gas jets. The telephone had been exhibited the previous year at the Centennial Exhibition and was regarded as a marvel, but a toy; few guessed that it would soon become a necessity of life—a perplexing and harassing necessity, breeding wrath and bad language. Marconi had not yet beckoned the mystic symbol out of the fogs of the North Atlantic across eighteen hundred miles of lonely sea. Unjustifiable and maddening street noises were less common than now; the trolley with flat wheels, the huge hand organ, the riveting machine and other sin-breeding infamies were not, every minute of the twenty-four hours, producing profanity, insomnia and neurasthenia. Color photography, safety matches, the underground railroad, the elevated railroad, the steel trust, benevolent assimilation and the big stick were unknown. The country was just recovering from the fierce electoral struggle between Tilden and Hayes, and there was no such thing as an eastern question known to the policy of the United States.

A man could be graduated in medicine after two years of study; only the crudest preliminary education was required; the college professors divided the fees and made enormous incomes by it, and most medical schools were private institutions run for private gain just as truly as groceries and tobacco shops. There was not a genuine trained nurse in any hospital in Philadelphia. Surgery was narrow and limited compared to what it is to-day: it consisted chiefly in litigating for aneurism, performing tracheotomy, amputation and resection; operating for empyema, strangulated hernia, bone disease and stone in the bladder; reducing dislocations; setting and dressing fractures; trephining for head injuries; caring for wounds; removing foreign bodies and extirpating tumors. A few surgeons—notably the Atlees—were doing ovariotomy. Comparatively few operations were done, and most ignorant persons were afraid of hospitals, would go to one only in the last extremity, and then went in deadly terror of the black bottle and the fatal potion.

Year by year there has been a growing confidence in hospitals. During the year ending Sept. 30, 1880, there were 890 in-patients treated in the hospital. During the year ending June 1, 1906, there were 6,118 treated —nearly seven times as many—with the same accommodations. During the year ending Sept. 30, 1880, 483 new patients were recorded in the Surgical Out-Patient Department, and these included genitourinary and orthopedic cases. Last year there were 4,043 new cases, excluding genitourinary and orthopedic cases. During the year ending Sept. 30, 1880, only 267 operations were done, including general, orthopedic, ophthalmic and genitourinary surgery, as well as gynecology. During one day a short time ago twenty operations were done—nearly 10 per cent. of the number performed in an entire year twenty-seven years ago. In other words, at the present time as many operations are performed in two weeks as were done in a year in 1880.

In 1877 the great wave of surgical progress, which is one of the most notable events of a notable age, was beginning to form a moving billow. Appendicitis was unknown and was to remain so until Reginald Fitz, of Boston, published his epoch-making paper in 1886. Mellier had guessed the truth in 1827, but he was sup-

pressed by authority, and thousands died because Dupuytren wrong was believed and Mellier right was doubted. In 1877 drugs producing local anesthesia had not been discovered. Bodies for dissection were difficult to obtain and great abuses sometimes arose in attempting to obtain them. The essential importance of embryology in solving many problems of deviation and of disease was beginning to be appreciated. Pathology, chemistry, physiology were becoming fruitful of marvels.

It was just dawning on teachers that students must not only see and hear but must also do, and that, as anatomy is learned in the dissecting-room, many other branches must be learned in the laboratory. We have had the dissecting-room—that is, the laboratory of anatomy—for centuries; we now must have laboratories for at least a dozen other subjects. A few progressive and able men had grasped the full importance of the recent discoveries of Pasteur, had realized that infectious diseases were probably due to bacteria, and that preventive medicine was destined to become one of the highest callings to which man could devote his brain and consecrate his life. Prof. John K. Mitchell, with the intuition of the poet, had claimed, away back in the forties, that fungi caused infectious diseases, but he was unable to prove it. The evidence of the existence and power of minute fungi was furnished by Pasteur, but the germs of suppuration were not discovered by Ogston until 1881, and the bacilli of tubercle were not discovered by Koch until 1882.

One reason that operations have become notably more frequent since 1877 is found in a great discovery made but a few years before that time. In 1876 a modest, unassuming Scotch surgeon attended the International Medical Congress in Philadelphia, and from that visit dates the beginning of a radical change and an enormous advance in surgery. That surgeon, a few years before, had made a study of the views of Pasteur and had come to the conclusion that microscopic fungi were responsible for many unfavorable changes in wounds, and he sought to prevent the entrance of bacteria into wounds by what he called antisepsis. The profession was slow to believe. In 1877 only two surgeons in Philadelphia employed antisepsis. These surgeons were W. W. Keen and J. Ewing Mears.

Antisepsis has wrought marvels as mighty as were ever conjured by the seal of Solomon. It really made possible most of the surgery of the brain, the chest, the abdomen and the abdominal viscera. It has practically abolished the so-called blood poisoning as a sequel of surgical operations; it has enormously mitigated post-operative pain and fever; it has lessened the mortality of major amputations from over 50 per cent. to under 5 per cent., of compound fractures of the long bones from over 50 per cent. to under 1 per cent., of ovaritomy from at least 50 per cent. to about 5 per cent. Truly the life of Lord Lister has been a greater boon to the human race than the lives of a hundred military heroes or a score of kings. I would be prouder to be Lord Lister than to be any potentate that lives and reigns.

For fifty-two years Jefferson College was without a regular hospital. During these years many notable things were done, in spite of cramped quarters, inadequate means and makeshift appliances. This indicates that able and enthusiastic men can often obtain great results with very imperfect instruments. Fine buildings and ample equipments are of great value, but men are of even greater value. It has been well said that the laboratory in which the *x*-rays were discovered contained little but a Crookes tube, a Ruhmkorff coil and Roentgen himself. Back of every appliance must stand a man able and anxious to use it to the best advantage. Sound college policy seeks to obtain able men as well as costly buildings, and to develop teachers, operators, writers and experimenters, as well as to found laboratories. Let us not be so "charmed with the shell" that we "cast away the pearl"!

Although until 1877 we had no building especially devoted to hospital purposes, we had a sort of hospital from the very beginning, and dispensary patients were cared for and operations were regularly performed before the class in our original college building. That building, the precursor of our present college and hospital, was our home for three years and still stands. It is 518 and 520 Locust street. It is an old building. From the side driveway iron tiebeams are visible in the walls. It is three stories in height. The front door and windows are arched, and access to the interior is obtained by mounting several well-worn stone steps. The front, except for the sign of a business firm, is practically as it was eighty-two years ago. Around it are many modern structures and also some houses that stood in 1825. It was built for a cotton factory, then became the Winter Tivoli Theater, then the Jefferson Medical College and is now a bottling establishment. In 1825 Locust street was called Prune. Directly opposite the college was the Walnut Street Prison for criminals and debtors, one of the rules of which was that the yard must be "kept free from cows, hogs, dogs and fowls." On the east the college looked out directly on the burial ground of the Free Quakers, those apostles of peace whose combative instincts had grown so strong that they had fought under Washington in the War of the Revolution, and had been expelled from meeting for doing so. To the west, across Sixth street, was the potter's field, now Washington Square. Directly back of the college was an ale house, and a block or two away were several churches. Crime and misery in front, death on either hand, and manifold consolations in the rear!

Every teacher wore a swallowtail coat, even in the daytime, and drove a chaise. If a student were hungry he could go forth into Fifth street and purchase hot corn or pepper-pot from colored venders in the street. If he felt convivial his wants could be satisfied in the Goose and Gridiron or in the Robinson Crusoe. If he wished to see a play he chose between the Olympic Theater, at Ninth and Walnut streets, and the Chestnut Street Theater, on Chestnut street above Sixth. If he wished to read he went to the Philadelphia Library on Fifth street above Walnut. If the thirst for combat filled his youthful veins he wandered up to Ninth and Chestnut streets, where he was sure to be promptly accommodated by a university man.

The Philadelphia Dispensary, Christ Church, St. Peter's Church and the Pennsylvania Hospital were where they stand to-day. The law courts were at Fifth and Chestnut streets. The mayor's office was at Sixth and Chestnut streets. The United States Bank, which was a political institution and a national issue, was in the building that is now the Custom House. The almshouse was between Tenth and Eleventh, Spruce and Pine streets.

There were no policemen, only watchmen, who were also lamplighters, and a favorite nocturnal amusement was beating the watch. At this time revolutionary traditions were still active and influential, and many men were living who had crossed the Delaware with Wash-

ington, had wintered at Valley Forge, had known Benjamin Franklin, and had gone out in the streets to cheer and build bonfires when Colonel Tilghman rode in with the news from Yorktown.

The year of our opening was the year Lafayette completed his final tour in America, that John Quincy Adams became president, that Henry Clay assumed the office of secretary of state, that Oliver Wendell Holmes went up to Harvard, that Poe prepared for the University of Virginia, that Washington Irving started for Spain, that Longfellow celebrated his eighteenth birthday, that Fitz-Green Halleck traveled in Europe, that Hawthorne was graduated from Bowdoin, that Daniel Webster cast aside his free trade views and that Andrew Jackson really became the St. Andrew of Democratic adoration.

In that old building of the Jefferson College the elder Gross studied as a pupil of McClellan, the professor of surgery, Washington L. Atlee was a student, Nathan R. Smith taught anatomy, John Eberle taught practice of medicine, and W. C. P. Barton taught materia medica. In it George McClellan invented teaching by public clinics and the first operation was performed in it May 9, 1825.

Teaching from actual cases in collegiate clinics, a plan invented by McClellan and first applied in the school he founded, came to be the greatest strength of the institution. Teaching by college clinics was long opposed by many conservatives. It was held by them to be misleading, ineffectual and superficial, but, nevertheless, after much controversy, it came to be adopted as the most prominent feature of the curriculum by the famous faculty of '41, the faculty that contained Pancoast, Dunglison, John K. Mitchell, Huston, Bache, Mütter and Charles D. Meigs—a group that was unbroken until 1856. But we learn as we advance. "The thoughts of men are widened with the process of the suns." The large clinics have played an infinitely valuable part in medical teaching, but the days when they could constitute the sole method of clinical instruction have forever passed away. Accurate and intimate knowledge can be obtained only by close observation, and close observation is possible only to small sections; and the students now personally examine cases, assist in operations and give anesthetics—of course, guided and controlled by a teacher.

A new building was erected in 1828, and the last lecture was delivered in the original college building in March, 1828. The new building was on Tenth street above Walnut. This building was twice enlarged and was finally succeeded by the present structure on the corner of Tenth and Walnut streets. The ground once occupied by the college is covered by the new hospital. Up to the year 1844 patients on whom serious operations had been performed were taken to their homes in carriages and were cared for at home by the professor of surgery and his assistants. In 1844 two rooms were rented over a store at the southwest corner of Tenth and Sansom streets and a miniature surgical hospital was established. Dec. 23, 1846, a patient in this little hospital was operated on by Mütter for tumor of the cheek, and ether was given to him—the first time an anesthetic was used in Philadelphia. In 1850 two floors were rented over a bottling establishment, which stood next door to the college, and were fitted up for a hospital. In 1852 these rooms were opened directly into the college. Fifteen patients could be accommodated. On clinic days a patient was carried into the arena of the upper lecture room of the college, the room in which the professor of anatomy taught, and the room that is shown in Eakins's famous oil painting of Professor Gross operating, which now hangs in the college. The operation was performed and then the patient was carried back to the little hospital. The meals for the patients were cooked by the family below. These rooms constituted the hospital until 1877, and were the hospital of Mütter, the elder Pancoast and the elder Gross. There was no resident physician in this hospital; the clinical assistants took turns in acting as residents.

My late colleague and old teacher, Dr. Brinton, in his address on The Faculty of 1841, says:

> Hard-worked, these latter were, too. For my part, I can remember many a night of waking and bedside watching within those narrow, cramped and musty walls. I have sat, since then, at many a well-ordered table; but never have I relished dainties as I did then the savory oyster and steaming midnight cup of coffee, served by the order of a crafty faculty to insure the watchfulness of the fagged-out watcher.

The school and its hospital had, from the start, a surgical bent. A surgeon created it. It was born of genius, for McClellan was its founder. He was not a Philadelphian, but came here and made his fame. His ancestry was distinguished and the blood of fighting Highlanders and Revolutionary patriots ran hot in his veins. He was born in Woodstock, Conn., in 1796. He was graduated from Yale in 1815. During his boyhood he was called "Little Mac," but he could not have dreamed that a son of his, another "Little Mac," was to come to the command of great armies, to direct titanic battles, to stand on the flaming brow of Malvern Hill, and to ride between the lines at Antietam.

Dr. McClellan studied medicine at the University of Pennsylvania, was an office student of Dorsey, and was graduated in 1819. During his student days he was a resident student in the almshouse (they then had resident students instead of resident physicians). He became almost immediately successful in practice. All his interest was for surgery, and shortly after his graduation he couched for cataract, extracted the lens for the same disease and did many formidable operations. He organized a private class in anatomy and surgery and started a dispensary for the instruction of its members. This class and this dispensary were the germs of our school and hospital. The class became extremely large, numbering 180 men. McClellan knew and loved his subjects and taught them with captivating vim and enthusiasm. By the time he was 25 years of age he was regarded as one of the inevitable men of the future.

He removed the lower jaw for sarcoma; he devised a method to extirpate the parotid gland; he amputated the entire upper extremity; he advocated tearing out certain tumors, instead of dissecting them loose, in order to limit hemorrhage. He was anxious to teach; and, a place in the existing institution being denied him, he founded a new school, and took to it 150 men of his private class. He was energetic, intrepid, rapid in movement, quick in comprehension, positive in conclusion, emphatic in utterance, enthusiastic in everything he undertook. He had a wonderfully retentive memory, a steady hand, and a quick eye. He fought for what he believed to be right, but always in the open, and he never lurked in a dark alley and stabbed the passer by with innuendo or calumny. He was in the thick of all controversies, sure of the justice of his contentions and inspired by the fire of his genius. If an enemy was in the open, he attacked him; if a foe was in disguise, he unmasked him; if something was needed at Harrisburg,

he rode there and got it done—all the time lecturing, operating, practicing, writing, arguing in a perfect fury of amazing and keenly directed energy—an eccentric, lovable, brilliant, formidable and redoubtable man! Troubles came in the faculty, led by small and narrow men. Efforts were made to control, to direct, to suppress the professor of surgery, but the lash of official coercion struck unfelt on the stout shoulders of George McClellan. He resigned his professorship. We lost the name from the school; we were without it for sixty-eight years; but it has, I am proud to say, been restored to us again in the person of the founder's grandson, my distinguished colleague, the professor of applied anatomy. We have done the founder scant justice in the past, and it is with a feeling of peculiar retrospective affection that the least of all his successors pays this tardy tribute to his name.

I wish that time permitted me to speak of some of his successors—of Joseph Pancoast, one of the greatest operating surgeons of his time; a man so celebrated that Sir William Ferguson, then the head of English surgery, referred to him the daughter of Lord Chancellor Lyndhurst for a plastic operation; Pancoast, the dexterous, the dramatic, with a hand as steady as a rock, but as light as a floating perfume; with a heart that was a stranger to fear, and with an eye as quick as a flashing sunbeam.

Of Mütter, he of the musical voice and charming personality: Mütter, the debonaire, the eloquent, the enthusiastic, the beloved of the class; the man that brought to America the views of the great French school of Velpeau, Dupuytien Roux and Lisfranc; who developed in America plastic surgery and orthopedic surgery, then recently founded by Dieffenbach and Stromeyer; Mütter, who had wished the institution to build a hospital in 1841, but was defeated by the stupidity against which Richter tells us even the Gods fight in vain.

Of Samuel D. Gross, the greatest of them all, with whose life and services we are all familiar; Gross, who had fought his way to greatness from humble beginnings, who was graduated from our school in the class of '28, who founded surgical pathology in America, and who came to the foremost position ever occupied by a surgeon in this country; Gross, the author, the operator, the scholar, the teacher, the organizer, the scientist—LL.D. of Cambridge and Edinburgh, D.C.L. of Oxford; the founder of the American Surgical Association; the emperor of surgery in the United States, beloved and respected by all medical men. Whenever I had the privilege of listening to him I felt that fifty years of American surgery were speaking through his lips.

I would like to dwell on the younger Gross—brilliant, positive, emphatic; a teacher of wonderful force; a diagnostician of marvelous power; a determined, impressive and most courageous man—the man that, first of all in America, insisted on the necessity for radical operations in cancer cases. We stood by the corpse of a dead lion when we went to the tomb of the younger Gross!

I would I could speak of Brinton, so lately gone out into the great beyond, my former teacher and late colleague, my father's friend and mine; the trained military surgeon, one of the founders of the Army Medical Museum and one of the originators of the "Medical and Surgical History of the War of the Rebellion." And Keen, the master of us all, fortunately living still and kept from being with us to-day only by the interposition of the ocean—Keen, whose name is written broad and clear on most of the pages of surgical progress during the last twenty-five years. McClellan, Pancoast, Mütter, S. D. Gross, S. W. Gross, Brinton and Keen were the seven men that controlled surgery in Jefferson College for eighty-two years.

They obtained triumphs and made mistakes, but their triumphs were many and their mistakes were few. Let us learn from both. We have had a great instrument for good placed in our hands; let us see to it that it is used to the best advantage. Let us be earnest and energetic; let us have the highest ideals; let us strive for unity of action and harmony of thought; let us suppress as a venomous reptile any one who would breed contention, conflict and hate, and, above all, let us have enthusiasm.

Enthusiasm is the motive-force of progress. No really great deed was ever done in arts or arms, in literature or science, that was not the product of enthusiasm. It took Cook to the southern seas; it lured Gama around the Cape; it called De Haven to seek for Franklin in the awful solitude of the frozen North, and it beckoned Columbus across the ocean, from Palos to the Indies. Because of it the explorer tracks the dusky cañon and the miner "bleeds the veins" of the mountains, the navigator seeks the northern pole, and the student prints on his face the unobliterable lines of thought. It carved the Belvidere Apollo and it painted the Sistine Madonna. It struck fire from cold flint; it gave the wheel to the wagon; it invented the alphabet, and it saw in the steam wreaths from a tea kettle a force greater than that of all the men in the world united. It reared the pyramids; it built St. Peter's; it bridged the Hudson, and it laid the gleaming rails of civilization on the summits of the mighty Rockies. It took signals under the ocean; it carried messages through the air; it stored up speech in reservoirs, and it harnessed the lightning to drag the vehicles of man. It discovered the circulation; it invented the ligature; it introduced vaccination and anesthesia, and it laid the gentle hand of healing on the wounds of humanity through antiseptic surgery.

We note its presence in the aphorisms of Hippocrates; in the orations of Demosthenes; in the demonstrations of Newton, and in the discourses of Pasteur. It was with Alexander in the field as he conquered the world; it was with Plato in the grove as he founded philosophy. It was by the lonely lamp of Celsus and behind the sightless eyes of Galileo. It was on the battlefield with Paré and with Larrey and in the laboratory with Welch and with Leidy. It was in the hospital with Sydenham and Boerhaave, with Agnew and Samuel David Gross. It filled the lion heart of Abernethy, and it stirred the lordly soul of Hunter. It stimulated the labors of Washington and Cromwell, of Shakespeare and of Franklin, and it lit the councils of Cesar and of Lincoln, of the great Napoleon and of England's "Grand Old Man." May we feel it; may we realize it; may we be animated by this immortal principle; may we be driven by this divine fire! If we are, we shall take our college through higher aims to broader destinies, and make of her what she ought to be, the morning star among all the institutions of the land.

> "I hold it truth, with him who sings
> To one clear harp in divers tones,
> That men may rise on stepping stones
> Of their dead selves to higher things."

Comparative Value of Physicians.—One physician of scientific method is worth more to a community than twenty who are guessing and groping.—President Faunce, of Brown University.

Original Articles

THE PREPARATION OF THE SPECIALIST,

A PROBLEM IN MEDICAL EDUCATION.

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The rapid development of the medical specialties has been one of the most conspicuous features of modern medical progress. It has been only a few years since the work in rhinology, for example, has been carried beyond the scope of the man doing general practice. The beginnings of laryngology antedate those of rhinology by but a few years, and the man who discovered the use of the laryngeal mirror passed away only last year. The men whose work laid the foundations for modern otology are, many of them, still living.

The short period that has elapsed since the work in the several special fields was begun is in no way commensurate with the extent to which this work has been carried. There has developed in this short time for each of the specialties an enormous literature. In the fundamental sciences alone, in anatomy, in physiology, in embryology and in pathology there has been accumulated for each specialty a great store of facts. To become acquainted with these established facts in any special field the student has before him a work that will require years of painstaking study. The specialist who would understand the real problems in his particular field, who would be able to read intelligently the advanced work that is now being done, must first know what has already been accomplished. To gain this knowledge is no easy task. When we realize that comparatively few of the men actually engaged in the practice of a specialty have an adequate appreciation of the facts that have been established in their own field we need not be surprised to learn that men engaged in different lines of medicine often fail to understand or to appreciate the work of the specialist. These men are sometimes inclined to look on such work as trivial when compared with the problems with which they have to deal. Occasionally even we hear of a practitioner who seems to believe that all there is to laryngology is the ability to use the laryngeal mirror; that the chief work in the training of the otologist is to learn to use the ear speculum, and that the rhinologist is merely one who is familiar with the use of the nasal speculum.

In spite of the rapid development of the specialties and the lack of adequate time for a proper appreciation of this work to reach the men engaged in diverse fields of medicine, the actual practical results obtained by the specialist have called forth a general recognition of the tremendous gain to clinical medicine brought about through the development of the several specialties. This recognition finds expression in the demand from all parts of the country for the trained specialist. This is not to be interpreted in any sense as an indication of the passing of the general practitioner. It is the demand for the man highly skilled in a particular field to step in when the general practitioner can go no further. This demand brings to our large centers of medical education physicians from all parts of the country who see an opening for a trained specialist in their own community and who come to us to get their training. What sort of preparation are we giving these men? Are we giving them what they come here for—an adequate training for practice in a special field?

Before attempting to answer this question let us first consider what should rationally constitute an adequate preparation for the physician entering the practice of a specialty. An appreciation of what is implied in the term specialist in its best sense is of great importance not only to the general practitioner in determining for him what he has a right to expect of a specialist, but this appreciation is all the more important to those physicians who contemplate entering the practice of a special field. Its absence may be the factor which leads them unconsciously to place themselves on the plane of the charlatan by assuming that they are specialists when they have had none of the training requisite to make them competent to do the work of the specialist.

THE PREPARATION.

That the specialist should have the broad training of the regular medical course goes without saying. That in addition to this there is need for special preparation should be as evident as is the difference between the actual work of the internist and that of the man engaged in the practice of a specialty. The general lines which this special training should follow are the same as those followed in medical schools in the training of the man for the practice of general medicine.

In the first place there should be demanded a thorough special training in the fundamental sciences, which training is just as essential to a clear understanding of the clinical problems of a specialty as is the general training in these sciences to an understanding of the problems in general medicine. In the preparation of the student for the practice of general medicine we require a knowledge of general anatomy, general physiology, embryology and pathology. There is in addition to this a special anatomy, a special physiology, embryology and pathology for each special field which clearly can not be required in the preparation of the general practitioner, but which just as clearly should form the foundation work in the preparation of the man entering on the practice of a specialty.

In the preparation of the student for general practice an understanding of the general embryology of the body is considered an essential part. Is there any less reason why the man entering on the practice of a special field should not be required to have a thorough knowledge of the special embryology of this field? Not the sort of knowledge that can be acquired from text-books, but the real knowledge that can be gained only from the study of a large series of actual preparations.

In the training of the general practitioner a knowledge of the general physiology of the various organs is considered of fundamental importance. Is there any reason why a thorough understanding of the physiology of the ear, for example, is of less importance to the otologist? An acquaintance with the mechanism of the middle ear with an understanding of the various problems in sound conductions, a knowledge of the function of the cochlea and of the problems in sound perception are just as essential to the otologist in diagnosing and treating the various disturbances of function arising from disease of these parts as is a knowledge of the functions of the liver to the internist.

In the preparation of the general practitioner the study of anatomy forms an important part. Is there anything peculiar in the practice of a specialty which eliminates the necessity of the specialist's making a thorough, careful, painstaking, exhaustive study of the anatomy of the part with which he has to deal? The regional anatomy of the temporal bone, for example, is

perhaps the most difficult to master of any part in human anatomy. A great many vitally important structures are here found crowded together in a very small space and are encased in hard bony walls which render their study by ordinary methods of dissection unsatisfactory. A thorough mastery of these relations can not form a part of the general medical or surgical training, but such a knowledge must of necessity form a part of the training of the otologist who would be prepared to operate in the region of the ear. This knowledge can not be acquired from text-books any more than it can be learned by operating on the ear, as is too often attempted. An adequate training for the otologist in the gross anatomy of the temporal bone, even of the relations having a more strictly surgical interest, can only be acquired through the careful, painstaking study of a large series of actual preparations, each made especially to bring out in a clear manner this or that relation. There is no short cut to the necessary knowledge of these anatomic details. The same close attention must be given to the study of such preparations as the medical student is accustomed to give in the study of a histologic preparation. The absolute necessity for such careful special anatomic training can be best appreciated by considering for a moment the risks taken by the physician who has failed to get this intimate knowledge when he undertakes such an apparently simple procedure as curetting the tympanic cavity. The floor of the tympanum is frequently encroached on by the bulb of the jugular, which often produces a distinct prominence in this cavity, from which it may be separated by a thin bony wall; through this thin wall a curette could be readily passed. Occasionally even this bony wall is absent and the jugular bulb is exposed in the lower part of the tympanum. Along its anterior wall the internal carotid comes in more or less close relation to the cavity of the tympanum, from which it, too, may be separated by an easily penetrated, thin, bony shell. This is particularly the case near the tympanic orifice of the Eustachian tube, a region often requiring a thorough curetting. The facial nerve passes through the tympanum, lying along its inner wall, and its delicate bony covering is not infrequently wanting. Even when this bony covering is present the nerve can easily be injured by the curette when the exact location of its course is not accurately known. The dislocation of the stapes from the oval window in the process of curetting the tympanum is not infrequently the price paid for the lack of knowledge of the exact location of this structure.

Enough, perhaps, has been said to emphasize the necessity of special training for the physician who enters on the practice of a special field and to point out in a general way the scope of this training. That there should be the same careful, systematic training on the clinical side as in the fundamental sciences is, of course, well recognized. It is at once apparent that such a training can not be acquired in six weeks nor in six months. To give the specialist the same sort of training in his subject which we now require of the general practitioner for his work would require at least two years in addition to the regular medical course.

THE TRAINING PROVIDED.

To return now to our question, What is being done in our medical centers to provide training for the men entering on the practice of the specialties? The answer is only too well known. We are doing practically nothing in an adequate way to provide this training. The physician who comes to our medical centers for his preparation finds the only thing offered is an opportunity to attend clinics in this or that postgraduate school. In these clinics a little is heard in a desultory fashion about the symptoms, the diagnosis and the treatment of some of the more common diseases. But, for the most part, not a word is heard of the fundamental science of anatomy, of physiology, of embryology or of pathology. After a few weeks, or, at most, a couple of months' attendance on these clinics the physician, realizing that he has seen practically all there is for him to see, returns to his home town, where he puts out a sign, "Eye, Ear, Nose and Throat Specialist."

Many of these men are not even in a position where they are able to read intelligently the current literature in their subject, except the simpler clinical reports of cases, which are equally intelligible to anyone in general practice. A comprehension of the real work that is being done in their specialty is entirely beyond their reach. Physicians are scattered all over the country to-day limiting their practice to special fields, who have not had as much training for their special work as have the recent graduates from our best medical schools.

There are, of course, many exceptions where, even in the smaller towns, men are located who have realized that six months' attendance on clinics does not make a specialist and who have been willing to spend the years of hard work necessary to get an adequate preparation. These men have worked their way to a position where they have an appreciation of what is actually being done in their special field and they are prepared to do the work required of the specialist. They deserve the more credit because there has been no standard to guide them in this painstaking effort.

The development of the specialties has come about so rapidly that this demand for special training is necessarily a recent one. It presents a new problem in medical education. Recognizing, as we all must, the necessity for adequate special training for the practitioner who enters on the practice of a special field, the problem is, how shall this training be provided? That this task does not come within the scope of work that can be properly cared for in our undergraduate medical schools is, I believe, apparent. The problem of our medical schools is to provide the right sort of training for the men entering on general practice. The work of preparing men for special practice is quite distinct from this and forms no part of the preparation for general practice. Our postgraduate schools can assist in this work by providing, under the right sort of men, some of the clinical instruction which must necessarily form an important part of this preparation. Farther than this our postgraduate schools are not prepared to go. They have none of the facilities for giving the right sort of work in the special anatomy, the special physiology, etc., which as the foundation work must form a large part in the actual training of the real specialist.

THE UNIVERSITY AS A TRAINER OF SPECIALISTS.

The only places in which this work can properly be done are those universities and colleges in which adequate facilities are afforded by well-equipped laboratories.

What the scope of such preparation should be we have already pointed out. In the first place there must be a thorough, detailed and, as far as possible, exhaustive study made of the special anatomy. A similar course covering the special physiology, another covering the

special embryology, and still another covering the special pathology must be given. Courses covering the anatomy and pathology of several special fields are already being offered in some of our leading universities. It is but a short step to provide similar courses in each of the fundamental medical sciences. Courses in certain of the allied sciences should properly find a place in such a curriculum. In ophthalmology, for example, a course on the physics of light, and, in otology, on the physics of sound, would be of great assistance in imparting a knowledge of the problems peculiar to these specialties.

These courses should properly be placed on the basis of genuine graduate courses. That is to say, not only the established facts in each subject should be brought out, but the work should lead up to the frontier line where the actual research is being done and where the unsolved problems in the subject can be presented and discussed. The work should be so laid out that the physician who desires could work for a higher degree in medicine—the degree of doctor of philosophy, for example, in ophthalmology or in otology. The incentive which the granting of such a degree would give to the proper training of the specialist would be enormous. The offering of such a course by one or two of our best university medical schools would in itself serve to show the physicians who contemplate entering the practice of a special field that something more is expected of the properly-trained specialist than a few weeks, attendance on clinics in a postgraduate school. The superior advantages afforded by such courses would at once be appreciated by the physician who earnestly is seeking to get the best possible preparation before entering on the practice of a specialty. It is not to be expected, at least for some time to come, that all the men preparing for special fields will work for this higher degree. Well-trained men, competent to do the work required of the specialist, can be equipped without their having completed all the work required for this degree. On the other hand, the best men—those who have the ambition to make a name for themselves—will welcome this opportunity for getting the best possible preparation, together with the training for original research, which is always an important part of the work required for the degree of doctor of philosophy.

A SUGGESTED COURSE.

In order to make more clear what is contemplated in the work required for this higher degree in medicine, we might consider briefly some of the features to be required in a course leading to the degree of doctor of philosophy, for example, in otology. In the first place the time required to complete the work for this degree should be at least two or possibly three years in addition to the regular medical course. One whole year at least should be devoted to the fundamental sciences and at least another year, under capable instructors, to the clinical side. In the fundamental sciences a major of work running through the entire year in the special anatomy of the ear would be none too much. In the special physiology of the ear a similar course should be required. The work now offered in the department of experimental psychology at our leading universities could easily be adjusted to meet all the requirements of such a course. In the special embryology of the ear the material necessary for a thorough, exhaustive course can be readily prepared in any first class anatomic laboratory. In the department of physics a course dealing with the physics of sound could be easily provided. Owing to the fact that most of the advanced work in these subjects is published in French and German, a reading knowledge of these languages should, of course, be required. In the fundamental sciences the work should lead up to a discussion of the unsolved problems in the subject. The training for actual research must be insisted on just as is done in any department where the degree of doctor of philosophy is offered. It is not of vital importance that the student have the type of mind capable of taking the initiative in original investigation. The training for such work, however, under proper direction should be an important part of the work for the higher degree. The value of this training in the preparation for clinical work is inestimable; the delicacy of technic which must be mastered, the training to study a problem from every possible point of view, the training to search out and make use of the literature of a subject, the patience required to carry to its completion a piece of research, these are some of the qualities developed in the training for research that will be of the greatest value in the clinical study of cases.

By demanding in the training of the specialist courses covering the fundamental sciences of his special field, together with systematic clinical courses, we are asking of the specialist only the same kind of preparation which we have long insisted should form the preparation of the men entering general practice. By putting this special work on the basis of real graduate work and giving the opportunity to the specialist, if he so desires, of working for a higher degree in medicine, the degree of doctor of philosophy, we are but doing for the specialist in medicine what has already been done for men in the other sciences. We expect of the man who would reach the highest success in the field of physics, for example, that he devote a term of years doing graduate work in physics until he has earned the degree of doctor of philosophy.

Is it asking any more of the man whose ambition it may be to make a name for himself in a specialty like otology that he put in the same amount of time doing graduate work in his subject until he has earned the degree of doctor of philosophy in otology? Are the men in the medical specialties less willing to make this effort than the men working in the pure sciences? We do not believe that medical men are any less willing than are the men in other fields of work to make the sacrifice of time and money necessary to win the higher ultimate success, especially since the material returns are greater for the successful medical specialist than for the man in other sciences.

The opportunity of obtaining the higher degree for advanced work should not be limited to the specialties already mentioned, but, as a matter of course, should be open to all branches of medicine, including internal medicine and surgery.

To summarize briefly, the need for special training for the men entering the practice of a medical specialty is as urgent as is the training of the physician for the work of general practice. This training should be as much in the fundamental sciences of his specialty as in the clinical side. The only place where this work can be properly done is in our universities. This work should be put on the basis of genuine graduate work, leading to the granting by the university of a higher degree, the degree of doctor of philosophy in medicine. The offering of such courses, even by one or two of our

best equipped universities, and the granting of this higher degree would serve to stimulate higher ideals and better preparation in the physicians all over the country entering the practice of the specialties. Finally, it is the duty of the faculties of our university medical schools to solve this problem by standardizing the work required in the preparation of the specialist. Our great need is not for more specialists, but for properly trained specialists.

THE PRESENT STATUS OF PHOTOTHERAPY.*

JAY FRANK SCHAMBERG, M.D.
PHILADELPHIA.

Since the epoch-making researches of Finsen, light therapy has been accorded an established place in the treatment of disease. Finsen and his disciples have conclusively proved the value of this agent in the cure of one of the most disfiguring and distressing of cutaneous maladies—lupus vulgaris. Not every patient with lupus vulgaris can be cured by phototherapy, but this treatment produces a larger number of successes and effects better cosmetic results than any other known procedure. The best results are obtained when all of the details of treatment are carried out in accordance with the teachings of Finsen. In the light institute of Copenhagen, which city has become the mecca of lupus patients, better results are obtained than elsewhere by reason of the skill of the physicians and the experience of the nurses. Treatment with the high power (50 to 80 amperes) Finsen arc lamps is not at all adapted to office use because of the size of the apparatus, the cost of the current, the duration of the individual treatments and the imperative services of a trained assistant. The same reasons militate against the successful operation of such lamps even in hospitals. In the city of Philadelphia there are not enough lupus patients to keep a large lamp going without great cost to the institution or to the patients. We have a large lamp in one of our hospitals in Philadelphia (Fig. 1), but it is only occasionally used. I have been told that no New York hospital is now actually using the large Finsen apparatus.

Many efforts have been made to improve the construction of lamps so as to lessen the cost of operation and the duration of the exposures. With the possible exception of the Finsen-Reyn lamp, these efforts have been unsuccessful. Lamps of the Lortet-Genoud and London Hospital type (Fig. 2) and the iron electrode lamps treat a larger surface and cause more rapid reaction, but are decidedly lacking in penetrative effect.

THE BASIC PRINCIPLES OF LUPUS PHOTOTHERAPY.

The rationale of light treatment in lupus vulgaris is based on three main propositions: (1) The property of certain rays of the spectrum to destroy micro-organismal life. (2) Their ability to penetrate the skin. (3) Their power to produce reactive structural changes. Success in the light treatment of lupus depends, therefore, on the ability of the rays to penetrate, to kill bacteria and to inflame.

The destructive effect of light on bacteria was proved as far back as 1876 by two English workers, Downes and Blunt, in an investigation most remarkable for its accuracy of detail. The results were confirmed by the researches of Arloing of Lyons in 1885. Numerous investigators, including Finsen, Bang, Bie, Busck, Freund, Strebel and others, have further proved the bactericidal influence of light.

Bang showed that unconcentrated light from a 30 ampere arc at a distance of 30 cm. will kill a surface layer of tubercle bacilli in six minutes.

The strongest bactericidal sun's rays are absorbed in the air, and thus an arc lamp has been found superior.

Dieudonné observed that bacteria were killed in half an hour by direct sunlight, in six hours by diffused daylight, in eight hours by electric arc light of 900 candle power, and in eleven hours by the electric incandescent light.

Other investigators have demonstrated that concentrated sunlight will check germ growth in one minute and kill bacteria in from five to seven minutes. Concentrated electric light checks growth of bacteria in from four to five minutes and kills in from fifteen to twenty minutes. Arc light from metal electrodes and the electric spark kill micro-organisms in from five to forty seconds.

Von Jansen demonstrated that a piece of skin inserted between the light source and the bacteria did not prevent their death when the thickness of the skin was 1.2 mm. and the exposure one and one-fourth hours. With 1.5 mm. thickness bacteria were no longer killed. Bacteria were weakened at a distance of 4 mm. in the tissues.

Busck killed pneumococci inoculated into the cornea of rabbits with light, and Nagelschmid destroyed tubercle bacilli experimentally inoculated into the skin of a guinea-pig.

On the other hand, Klingmüller and Halberstädter[1] claim that the Finsen light does not kill the tubercle bacilli deep in the tissues. They exposed pieces of lupus tissue for ten minutes to the Finsen lamp and then inoculated them into the peritoneal cavity of guinea-pigs. That the bacilli were alive was evidenced by the fact that tuberculosis resulted.

It has been demonstrated that the bactericidal effect of light is largely exerted by the blue, violet and ultra-violet rays. The most scientific experiments on this point were carried out by Marshall Ward, who broke up light by passing it through a rock-crystal prism and allowed the spectrum to be cast on an inoculated solid culture medium. He found that the bacteria-killing effect began first in the transition between green and blue, and was strongest on the border between blue and violet. Especially when electric light was employed the bactericidal influence of the light extended far into the ultra-violet region. The dominant ability of the ultra-violet rays to kill bacteria, which was first demonstrated by Ward, was independently determined by Finsen three years later.

More recent studies by Bie[2] have established the important fact that the blue-violet end of the spectrum does not exclusively possess bactericidal properties. He says: "I found that with the application of a sufficiently strong light all portions of the spectrum were able to restrain the growth of bacteria or to kill them. The red rays possess the weakest power; this power then increases as one approaches the ultra-violet end of the spectrum, where it is strongest." Four per cent. of the bactericidal effect was ascribed to the red, yellow and green rays, while the blue, violet and ultra-violet rays exercised about 96 per cent. of the effect. Red, orange,

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Deutsche med. Wochschr., 1905, No. 14.
2. Die Anwendung des Lichts in Der Medizin, Wiesbaden, 1905.

yellow and green act only after long exposures. Pure red requires one and one-half hours to produce a determinable effect on bacteria.

Some difference of opinion exists as to the manner in which the tubercle bacilli in the skin in lupus are destroyed. Finsen held that their death is due to the exclusive effect of the ultra-violet rays. This view is not universally concurred in, many German workers contending that they are destroyed by changes induced in the tissues by the light. Roux established the fact that light exerts an important influence on nutrient media. He showed that Arloing was in error in regarding certain spores treated with light as dead, and proved that they would grow when transplanted to a fresh unexposed medium.

Richardson demonstrated that the sterilization of urine by exposure to light in the presence of air is due to the formation of hydrogen peroxid. Dieudonné confirmed this observation and agreed with Richardson that the ability of light to kill bacteria is due to the formation in culture media of hydrogen peroxid. Kruse, who carried out the same experiments, did not regard the results as due alone to change in the media, but also to a direct action of light on the bacteria. Bie admitted that hydrogen peroxid is formed in many nutrient media on exposure to light, but claimed that bacterial death is more rapid in media in which no hydrogen peroxid can possibly form.

Downes and Blunt early suggested that the destruction of bacteria by illumination depended on an oxidation process and required the presence of free oxygen. Bie's experiments led him to the conclusion that the destruction of the bacteria is not an oxidation process in the sense that the presence of oxygen is a necessary condition. The stronger the light in the blue violet and ultra-violet rays the less does its bactericidal effect depend on the presence of oxygen, and *vice versa*, the fewer the chemical rays that the light contains the less able is it to kill bacteria without the aid of oxygen.

The researches of Hertel[3] are most interesting in this connection. Hertel claims that the short-waved rays of light (chemical rays) cause a splitting off of oxygen from the blood and cell plasma, much in the same way as oxygen is freed from plants by light, and that this process affects both the tissues and the bacteria.

PENETRATION OF THE RAYS OF SPECTRUM.

It has been shown that the penetrating power of the various rays of the spectrum is in inverse proportion to their bactericidal and chemical power. The red rays are the most penetrating and the ultra-violet the least.

Most of the efforts in phototherapy in the past have been devoted to securing deep penetration of the chemically active rays. Within the past few years the attempt has been made to increase the chemical activity of the penetrating rays. In 1900 Tappeiner and Raab[4] made the important discovery that infusoria can be sensitized to the action of certain rays of light by the addition to their nutrient media of certain chemical agents.

This work was confirmed by Dreyer[5] working in the Finsen Light Institute in Copenhagen. Dreyer demonstrated that the addition to the nutrient medium of a small quantity of erythrosin renders bacteria sensitive to the action of the yellow and green rays of light. The germs which ordinarily are not influenced or but slightly influenced are rendered sensitive much in the same manner that a bromid of silver plate is sensitized to these rays. The microbes thus sensitized may be killed by the passage through moderately thick layers of skin of light from the usually employed sources owing to the increased action of the highly penetrating yellow and yellowish green rays. The *Bacillus prodigiosus*, protected by a layer of skin 1.25 mm., was not killed by exposure to light for eleven hours; after being sensitized death occurred after twenty minutes exposure.

Animal tissues, such as frog's tongue, rabbit's ear, human skin, etc., were also rendered sensitive to the action of the yellow and green rays.

In the treatment of lupus the exposures are greatly shortened by sensitizing the tissues.

Later Tappeiner and Jesionek[6] employed, before exposing to light, a 5 per cent. eosin solution as a paint and also subcutaneously in the treatment of superficial epithelioma, lupus, flat condylomata, tuberculous ulcer, etc., with alleged good results.

Lenkei[7] found that blue and yellow rays penetrated the skin and connective tissue to a depth of from 1 to 2 cm. When no muscular layer was present traces of the blue rays penetrated to a depth of over 3 cm. A small portion of the light penetrated to 5 or 6 cm. even through the muscular layer, but this was exclusively yellow rays. The red rays could not be examined because the ordinary light, sensitive substances are not changed by them, but Lenkei is certain that these last rays penetrate into the depths in larger quantities than the yellow. Five per cent. of the light consisted of blue rays and 80 per cent. of yellow and green.

Finsen and Jansen have compared the penetrating power of light from various lamps, namely, the Finsen, the Finsen-Reyn, the Lortet-Genoud and the Bang. They found that the two latter are distinctly inferior to the first two lamps when deep penetration was required.

It appears to me that these tests, which are based on the influence of light on silver salts, are open to error. It by no means follows that the chemical effect of rays of light on photographic plates is a measure either of the bactericidal power of the rays or of their ability to produce inflammatory changes in the tissues. I have found that an ordinary sixteen-candle-power incandescent lamp with a reflector will emit light which will pass through the skin, subcutaneous tissue and mucous membrane of the cheek and affect a photographic film in the mouth in thirty seconds (Fig. 9).

On the other hand, a light extremely rich in chemical rays (the uviol lamp) was unable to produce any effect in five minutes.

Photographic plates may be affected by the yellow and even the red rays, and these rays are the most penetrating.

Busck[8] found that red, orange and yellow rays passed through his hand and affected a photographic plate in five seconds. The blue, violet and ultra-violet rays from the same light source produced no effect on the plate in ten minutes. This will illustrate the comparative penetrability of the various rays.

HISTOLOGIC CHANGES.

The histologic changes effected in the skin by the action of light have been carefully studied by a number of

3. Ztschr. f. Allg. Physiol., iv-v.
4. Münch. med. Wochschr., 1900.
5. Derm. Ztschr., 1903, x, No. 6.
6. Münch. med. Wochschr., 1903, No. 47.
7. Die Durchdringunsfähigkeit der blauen und gelben Lichtstrahlen durch tierische Gewebe, von W. Lenkei-Almadi Orvosi Hetilap, 1906, No. 27.
8. Mittellung aus Finsen's Lys Institut, iv, 1903.

observers, including Moeller,[9] Sack,[10] McLeod,[11] Schmidt and Marcuse,[12] Zieler,[13] Meirowsky[14] and others.

The findings are in general agreed on. There is a pronounced dilatation of the superficial and deep cutaneous blood vessels with exudation of leucocytes. Sack believes the first change to be a proliferation of the endothelial lining of the blood vessels. Meirowsky, working in Unna's laboratory, states that the light stimulates the epithelial cells and leads to nuclear division. After intense exposures degenerative changes in the epidermis may take place and the dead cells may be cast off through the formation of blebs.

The light also causes an increase in the number of connective tissue cells and a swelling of the collagen. At the height of the process the rete mucosum is thickened. Unna says that light makes the skin dense and harder, in that under the influence of the light the protoplasm is reduced to keratin. Moeller demonstrated the fact that light caused a hyperplasia of the epidermis and an abnormal cornification.

THE INDICATIONS FOR THE USE OF PHOTOTHERAPY.

The treatment of lupus vulgaris represents the dominant field of usefulness of light therapy. Nevertheless, there are other diseases in which light may be employed with advantage even though it does not supplant other methods.

Light would doubtless have been more used as an auxiliary therapeutic measure in many cutaneous diseases had not the suddenly established reputation of the *x*-rays cast a shadow of obscurity over the milder acting agent. The ability of the *x*-rays to produce rapid and profound changes in cells and tissues constitutes at the same time the advantage and the disadvantage of that treatment. When judiciously and carefully applied in properly selected cases the *x*-rays certainly represent a wonderful addition to our therapeutic armamentarium; but improperly used they are capable of doing harm, often irremediable harm. Light energy, on the other hand, while much slower and much milder in its effect, is a perfectly safe remedy. Patients themselves have discovered this difference and will often permit one to use light therapy while refusing Roentgenization.

The supplementary list of diseases in which phototherapy has been alleged to be of value includes lupus erythematosus, alopecia areata, acne, acne rosacea, flat vascular nevi, certain forms of eczema, leg ulcers, etc.

LUPUS ERYTHEMATOSUS.

In this disease, one of the most refractory of dermatoses, phototherapy may often be used with the happiest of results. Finsen's first report included thirty-one cases with eleven cures and ten patients still under treatment. Since then a larger percentage of cures has been obtained by him. Leredde and Pautrier mention twenty-three cases with eleven cures, many partial cures and three failures. Morris and Dore treated eleven cases with great improvement in seven. Hyde, Montgomery and Ormsby report a total of nineteen cases, with five cures, nine patients greatly improved, three with but slight improvement and one made worse. I have had several cures in lupus erythematosus of the vascular type; it is in this particular form in which phototherapy is apt to be useful. The *x*-rays are often valuable in the hypertrophic variety, whereas they are apt to aggravate the condition in the vascular type.

ALOPECIA AREATA.

This occupies a place among the diseases in which light therapy is indicated. Finsen, Forchammer, Jersild, Leredde and Pautrier, Sabouraud, Hyde, Montgomery and Ormsby, Kromayer and others have reported successes. Professor Kromayer of Berlin has had such remarkable results that special reference to them is deemed valuable:

Kromayer[15] uses an arc light with iron electrodes, without pressure lens; a current of from 15 to 25 amperes is employed. The exposures range from one-half minute to ten minutes for each area, at a distance of from four to ten centimeters. In some cases Kromayer claims that a regeneration of the hair is evident after the first exposure. On the second day new hair points are at times visible. At first this was not believed possible, but was confirmed by independent examinations. Kromayer treated thirty-three cases of alopecia areata, which he divided into two classes: The milder ones with a hair loss of less than half of the head, and the severe cases with hair loss greater than this or complete. The result in the thirteen milder cases was throughout good; nearly all were completely cured. In three, small bald areas were still present; in a few, relapses were noticed. Of the twenty cases of the second group thirteen were total alopecia and the other seven approached total alopecia in various degrees. Of these twenty patients only five were treated with negative results, only one of which was not a total alopecia; hair growth was stimulated, but the hair either ceased to grow further or fell out.

Summing up his results, Kromayer claims twenty-eight successes out of thirty-five cases. In the milder cases the results were all satisfactory. In the severer group there were five failures among twenty cases. Many of these cases had lasted for years and had been treated with all sorts of methods without results. One patient, for instance, was a woman of 50 years of age age whose hair loss was almost total and had dated back twenty-five years. After twenty-seven treatments the hair was restored to normal condition except over the temples, where it is a little thin.

Kromayer concludes that the iron light at the present time is the best and surest remedy in alopecia areata.

The stimulating effect of the chemical rays of light on hair growth has been repeatedly observed in Copenhagen, where the bare arms of the nurses giving Finsen light treatment have exhibited increased piliary development.

HIGH-POWER INCANDESCENT LAMPS.

The much advertised high-power incandescent lamps have been viewed skeptically and not with much favor by dermatologists in general. The skepticism has doubtless been based on preconceived theoretical considerations. Subsequent experience may prove the lack of faith to have been well based, but in the light of newer researches as to the effectiveness of all rays of the spectrum, and as to the efficacy of heat rays, trial of such light sources by properly qualified and conservative men would be desirable. It will be recalled that Bie found that with the application of sufficiently strong light all

9. Bibliotheca Medica, Part D, 11.
10. Muench. med. Wochschr., July, 1902.
11. Brit. Med. Jour., Oct., 25, 1902.
12. Arch. f. Derm., 1903, p. 323.
13. Derm. Ztschr., 1906, No. 1.
14. Monats. f. Prakt., Derm., April, 1906, xlii.

15. Monats. f. Prakt. Derm., July 1, 1905.

portions of the spectrum were able to restrain the growth of bacteria or to kill them.

Audry and Krösing[16] have been enabled to heal venereal sores rapidly with heat rays. Holländer claims good results in lupus and chancres with his hot air treatment. Scholtz[17] believes that the heat rays in the Finsen treatment of lupus are by no means without effect. He is of the opinion that the chemical rays are absorbed in the superficial layers of the skin and that the death of the bacilli in the deeper layers is due to the heat rays.

MERCURY VAPOR LAMPS.

In 1892 and 1896 Dr. Leo Aarons,[18] a noted German electrician, demonstrated that a continuous electrical current passed through a vacuum tube containing a certain quantity of mercury is capable of creating an arc and of generating an intensely bright light emitted by the incandescent mercury vapor. Peter Cooper Hewitt of New York improved this lamp and made it commercially practical. This light contains few or no red rays and is extremely rich in blue, violet and ultra-violet rays. The latter, however, are largely absorbed by the glass of the tube itself. To obviate this absorption of the most chemically active rays Dr. E. Zchimmer, working in Schott's glass works, produced a glass (said to be a barium phosphate-chrome glass) which is pervious to the ultra-violet frequencies and which, according to Schott, permits by far the greater portion of the short waves originated in the glass tube to emerge. These tubes, which are made of varying lengths, must be tilted to make the arc and to start the light.

The lamp made by Schott is called the "uviol" lamp, the name being a convenient contraction of the term ultra-violet. Another mercury vapor lamp made of quartz with a water-cooling jacket is made by Heräus of Hamburg. For several years these lamps have been in use in Germany.

Axmann[19] treated with the uviol lamp thirteen cases of leg ulcer with cures after a treatment of some weeks; some of these cases had lasted years.

Acute and weeping eczema, after a ten-minute treatment were alleged by him to be so far improved on the following day as to require no further treatment. Acne, furunculosis and alopecia areata are also said to have been cured.

Hans Meyer[20] found that the uviol light acted on photographic paper through a piece of epidermis of a thickness of 0.5 mm. in three-fourths of a second at a distance of 1.5 mm. (The epidermis was taken from bullous lesions.)

Keller determined that the uviol light had a bactericidal influence, but acts only superficially. Plates exposed immediately after inoculation were affected, but later growth was not influenced.

Meyer had no success in ringworm of the skin, but secured favorable results in tinea versicolor. He believes that the uviol light, like the iron light, constitutes a method that surpasses others in the treatment of alopecia areata.

Meyer noted, as did Kromayer with the iron light, that fine hair tips begin to be visible after one treatment. That the light is the exclusive factor may be determined by comparing areas treated by the light with those that are not. He obtained good results in severe acne indurata. The acne nodules under the influence of the hyperemia undergo resorption.

In a case of bullous dermatitis herpetiformis Meyer obtained an apparent cure. The blebs dried up in a very short time under the influence of the light erythema. Excellent results were also obtained in the prurigo of Hebra.

Kromayer[21] considers the following indications for the use of the mercury vapor lamp (the author employed the quartz lamp made by Heräus): Lupus and superficial epithelioma, vascular nevus, alopecia areata, acne rosacea, eczema, rebellious syphilitic affections (psoriasis linguæ) and ulcers that are often refractory to ordinary general and local treatment. Kromayer obtained successful and sometimes brilliant results in isolated cases rebellious to all other methods.

Assfalg of Frankfurt[22] used the uviol lamp for one year. He believes that it is necessary to produce a light reaction in order to obtain therapeutic results. He treated three patients with alopecia areata and cured them with an average of fifteen sittings of from one-half to one hour in duration. The cases had lasted for at least a year and the patients had been treated in various ways without result. In several cases he saw extension of patches of alopecia areata on the border at the same time that new hair was growing in the center. He believes the hair returns more quickly under uviol treatment.

Acne was found to be very favorably influenced, Assfalg preferring the light treatment to the *x*-rays. A case of furunculosis of the entire back and chest of four years' duration and treated with various remedies was completely cured after ten treatments of from one-half to three-fourths hour in duration. There was no return within nine months. Two patients with chronic seborrhoic eczema were completely cured after five and eight treatments respectively. Two patients with acne rosacea were considerably improved after three treatments and are still under treatment. One is cured now for six months. A number of patients with chronic eczema, dry and moist, have also been cured.

Two patients with varicose ulcers were treated. One, the ulcer the size of a half-dollar, was healed after six irradiations, the other, still under treatment, was much improved after three treatments.

Gastou and Nicholas[23] report several patients treated with the Heräus quartz lamp; patients with lupus erythematosus, nodular tuberculid and glandular swelling were cured. The writers prophesied a great future for the lamp.

The uviol lamp has been employed in the Philadelphia Polyclinic for about a year. The breaking of the lamps interrupted the treatments, and some of the patients were obliged to be treated by other therapeutic measures. I have also used the uviol lamp in my office for some months. I have had constructed a tilting lamp-holder on a stand to receive two short tubes run in series and so arranged that the lamps could be used horizontally or vertically (Fig. 6). Above the lamps is a reflector covered with aluminum paint.

With this lamp a light reaction may be produced after five minutes' exposure at 4 centimeters distance. Several times, after ten minutes' illumination at from 4 to 8

16. Arch. f. Derm., xliii.
17. Berlin klin. Wochschr., 1904, No. 18.
18. Wiedemann's Annalen, 1892 and 1896.
19. Deutsh. med. Wochschr., 1906, p. 583.
20. Einige Erfahrungen mit der Uviol Lampe, Med. Klinik., September, 1906, p. 990.
21. Deutsh. med. Wochschr., 1906, No. x.
22. Muench. med. Wochschr., Oct. 9, 1906.
23. Bull. Med., 1905, No. 57, p. 668.

cm. distance, I have produced an erythema with some pulling of the eyelids. The erythema largely disappears at the end of twenty-four hours. The parasiticide properties of this lamp in my experience appear to be rather feeble. Petri dish agar cultures of the *Staphylococcus aureus, Bacillus coli communis* and the *Bacillus capsulatus aerogenes* were not killed after twelve minutes' exposure at 4 cm. with the Petri dish lid off. The cultures were about twenty-four hours old and it is possible that the effect of the light was insufficiently penetrating to kill the bacteria growing down into the medium.

I have used the light in alopecia areata, acne, eczema, lupus vulgaris and leg ulcers, but in entirely too few cases to justify any definite conclusions. I will briefly narrate the results and state my impressions:

CASE 1.—A. G., an Italian boy, aged 12, had an extensive alopecia of 14 months' duration. A partial regrowth at one time took place, but was followed by a subsequent loss of hair.

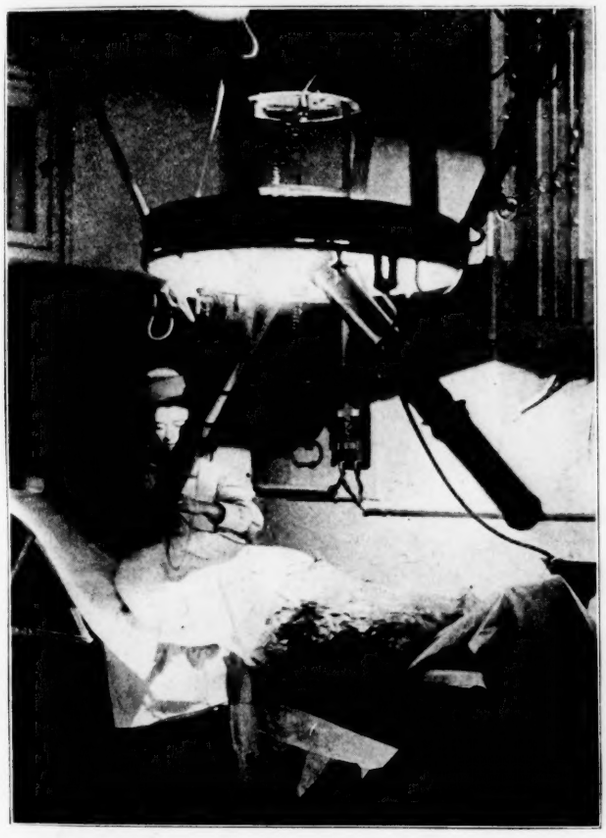

Fig. 1.—Large Finsen lamp in use at the Stetson Hospital, Philadelphia.

The usual local remedies were used without much effect. About fifteen light treatments of ten minutes' duration, at a distance of from 4 to 6 inches, were given in the course of from six to eight weeks. The hair soon began to grow and is now fully restored over the entire scalp except at the nape of the neck, which received no illumination (Figs. 3 and 4). This fact strongly suggests the actual curative influence of the rays in this case.*

CASE 2.—J. F., aged 12, a robust blond boy with a total alopecia of nine months' duration. The usual treatment was entirely without avail. Under uviol exposures a fine down appeared, which subsequently vanished. Fourteen treatments were given, but without any successful result.

CASE 3.—M. R., aged 21, a young woman with a half dollar sized patch of alopecia in the right temporal region of two weeks' duration. Three light treatments of from 15 to 20 minutes were given. There was extremely rapid restoration of hair. A stimulating antiseptic wash had been used and the cause of the unusually prompt result can not be definitely stated.

CASE 4.—In connection with these cases of alopecia areata, and bearing on Kromayer's successful results, it is proper to note a failure in the case of a 12-year-old girl with a total alopecia of ten years' duration. The girl was treated in the light laboratory of the Philadelphia Polyclinic with the London Hospital lamp. Thirty-two twenty-minute exposures were given without result. The accompanying illustration (Fig. 5) shows the light reaction in areas covered by the lens.

CASE 5.—T. S., man, aged 69, with damaged heart and kidneys and arteriosclerosis, had an extensive almost universal erythematous eczema of many years' standing. There was considerable thickening and lichenification. Itching was severe. Internal and local treatment of varied character had given no relief. The itching and infiltration were distinctly lessened by the light treatment. On the breakage of the tubes, *x*-ray treatment was substituted with more benefit than that derived from the light treatments. The patient is now vastly improved.

Fig. 2.—London Hospital lamp in use at the Philadelphia Polyclinic.

CASE 6.—M. M., a girl, aged 9, with a severe papular eczema of the face, hands and arms of several years' duration. Uviol treatments of fifteen minutes' duration were given twice a week. After four treatments, the itching was markedly diminished and the eruption greatly improved. Treatment was discontinued on account of breakage of apparatus.

Several cases of acne were treated, but inasmuch as these were private patients sole reliance was not placed on the light treatment. In non-suppurative papular or nodular lesions rapid resorption is effected by ten minute light exposures. The influence of the light is much more prompt but less permanent than that of the *x*-rays.

In several leg ulcers treated granulation was markedly

* The patient has remained well now for five months.

stimulated by a few treatments. One severe case appeared to be on the road to cure, when the breakage of apparatus caused substitution of mild *x*-ray treatment, with immediate aggravation and extension of the ulcers.

In this connection the observations of Strebel are pertinent:

Strebel showed that ultra-violet irradiation of open

Fig. 3.—Patient in Case 1. Alopecia areata of 14 months' duration cured with the uviol lamp.

Fig. 4.—Showing restoration of hair.

wounds causes rapid granulation and skinning over. He explained this by the favorable action of the ultra-violet light on the blood vessels and trophic nerves. He recommended ultra-violet light in the treatment of leg ulcers.

Axman found uviol light of great value in leg ulcers.

In summing up my impressions as to the value of the mercury vapor lamp I should say that it appears most capable of accomplishing good in alopecia areata, leg ulcers and certain forms of eczema. The light is rich in chemical rays, but lacks deep penetration. These lamps have the advantage over others that a broad volume of light is emitted which can be conveniently applied over large areas. Another very pronounced advantage is that the grade of light erythema desired may be produced and even predetermined by the distance and duration of the exposure. The histologic changes produced by light have already been referred to; that a dilatation of blood vessels with exudation of fluid and corpuscles and regressive changes in pathologically altered cells occurs after the production of a distinct light erythema is evidence that in properly-selected cases such treatment may prove beneficial.

Such phototherapeutic measures are not to be regarded as panaceas but as aids to other approved agents in the treatment of certain cutaneous diseases.

DISCUSSION.

Dr. W. S. Gottheil, New York City, said that in a corner of his waiting room there stands a big apparatus containing

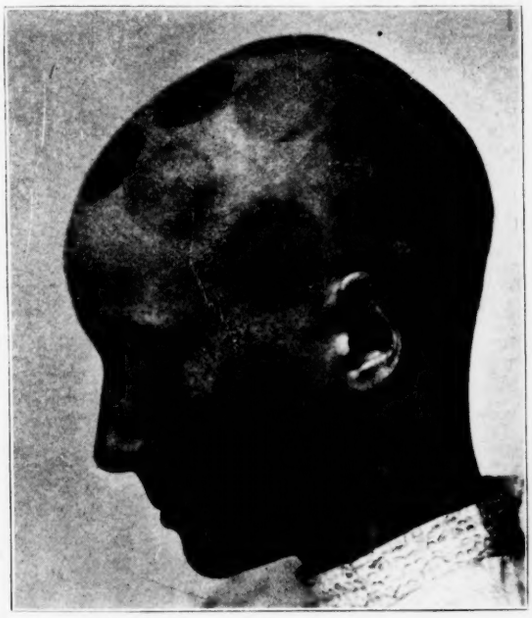

Fig. 5.—Patient in Case 4.—Alopecia areata of 10 years' duration treated without success with the London Hospital lamp. Areas of light erythema shown.

a 60-ampere arc light—the American form of the Finsen apparatus—unused for many months. He employed it persistently for a long time, and did get results, some of which have been published; but he hardly uses it at all now. His experience can probably be paralleled by some of the members present. He knows of one case, at least, in which a very costly Finsen apparatus was imported, and, when he last heard of it, it was still unpacked, owing to the amount of space that it required, and the time that its use would consume. In Copenhagen it may be possible to give daily treatments of an hour each for months at a time, but Dr. Gottheil's experience is that patients here will neither submit to it nor pay for it. Furthermore, the applicability of the method is limited. In alopecia areata he has obtained no results that were not attainable by simpler means. Some patients with lupus erythematosus were greatly improved and apparently cured, but some relapsed, and he has come to believe that one can never tell when this treacherous disease is ended. In lupus vulgaris the *x*-ray and ordinary mechanical methods of treatment are generally preferred. The Copenhagen results, according to all reports, are the best that have yet been attained

in this disease, but there must be great simplification of the method and shortening of the time required before it can be used extensively here. So far as penetration of the body by light rays is concerned, Dr. Gottheil proved some years ago that a sufficiently powerful beam of light can be made to penetrate the entire thickness of the human body and print on a photographic plate. All the rays, even the ultra violet, can be made to pass through the surface of the body and reach the internal organs. A necessary condition, however, is to have a light beam of sufficiently high candle power; 50 or 100 candle-power incandescents are toys, not efficient therapeutic agents. A 30,000 candle-power arc ray, concentrated as much as possible, and cooled, from a 60-ampere current, is as small a light as should be used for action on anything deeper than the epidermis.

DR. L. DUNCAN BULKLEY, New York City, said that several years ago he went to Copenhagen, and, after a careful investigation of the Finsen method of treatment, became enthusiastic regarding it, and purchased one of the lamps. He had it shipped to New York, properly set up and wired from the street, with a special attachment to allow water to run through the lens. That was two or three years ago. He has used it in two cases of lupus, and for the past year or two it has remained untouched. He is still strongly in favor of the

Fig. 6.—Method of using two uviol lamps in series.

Copenhagen method of treatment, and if a bad case of lupus vulgaris, with lesions about the face, should come to him tomorrow, he would advise the patient to go to Copenhagen. Finsen's results, as shown at the dermatologic congresses, both in Paris and Berlin, were very brilliant, and Dr. Bulkley said that Dr. Hyde of Chicago is very enthusiastic regarding them. In Copenhagen Dr. Bulkley saw 150 patients treated, men and women who had had the disease for ten, twenty and even thirty years, and the results were simply superb. By the method pursued there the lens must be held over one little spot for an hour at a time, and afterward a salve is applied. A corps of nurses makes these applications, and some of the patients have had as many as 600 or 800 of them, the treatment sometimes continuing over a period of from three to five years. The results obtained are better than he has ever seen by any other method of treatment, but he thinks that if the x-ray is used rightly, excellent results can be obtained in lupus. It is not so satisfactory, however, as the method followed in Copenhagen, and it is apt to result in scarring and burns. He has had little experience with the other forms of light.

DR. W. T. CORLETT, Cleveland, said that four years ago he visited Copenhagen and spent some time at the Finsen Light Institute, and saw many patients treated. He was impressed with the great care with which Finsen's assistants employed this method and by the benefit that was derived from the treatment, especially in lupus erythematosus and nevus. After getting better acquainted with some of the assistants, he learned that the consensus of opinion seemed to be that the best results are obtained in lupus erythematosus and vascular nevi. Like Dr. Bulkley, he became enthusiastic regarding the treatment, and made arrangements to have instruments and nurses sent to this country. He afterward visited Berlin and saw Finsen's apparatus employed, but the important details of the technic, such as the proper pressure and focus, were not observed. The results obtained were indifferent, and he believes the operators regarded it as an indifferent method. He then visited the clinic of Lange, who was carrying out two series of experiments, one by the well-known surgical methods, and another series by the Finsen light, but did not remain long enough to see the results of these experiments. He afterward saw a report in print that the light method has no special

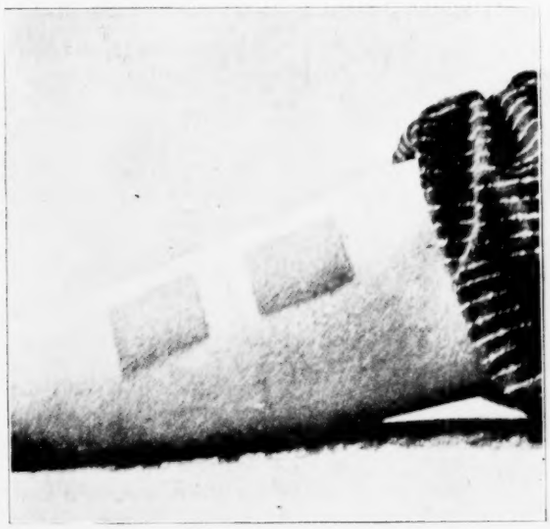

Fig. 7.—Condition of redness two days after a radiation of 15 minutes' duration with the uviol lamp. One of the squares was kept under water during radiation in order to ascertain if the heating of the skin by the lamp during radiation had any particular effect. The two places did not differ in any respect. (Schott.)

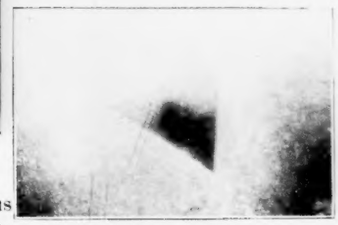

Fig. 8.—Shadowgram of a triangular piece of lead on a photographic film in the mouth, the cheek in contact with the pressure lens of the large Finsen lamp (50 amperes current).

Fig. 9.—Shadowgram of a perforated piece of lead on a photographic film in the mouth, the cheek being one inch from a 16 candle power incandescent lamp, backed by a parabolic reflector. Exposure 30 seconds.

advantages over the ordinary surgical methods that Lange was using. In Paris he found that the Finsen light treatment is applied in an indifferent manner, but in London it is given as in Copenhagen, under specially instructed nurses. In short, the result of his tour of investigation made him somewhat skeptical as to any special advantage the Finsen light possesses over other less complicated methods, and he gave up the idea of ordering a lamp.

DR. J. FRANK WALLIS, Norristown, Pa., showed a hood, made of sheet iron, with an aluminum reflector, and which is attached to the ordinary arc lamp. From this lamp he can obtain intensely blue or violet rays, and with it he has from time to time treated small acne lesions. One advantage of

this lamp is that the nearer the carbon, the stronger is the blue light. In addition to acne lesions, he has used it for small abscesses and sebaceous glands. There are also some cases of eczema that react very quickly to this light.

DR. M. L. HEIDINGSFELD, Cincinnati, said that he has used a Heraeus quartz mercury lamp with the greatest satisfaction. He said that, in his opinion, it possesses decided advantages over other instruments used in phototherapy, particularly in the furuncular type of acne and in the treatment of small abscesses, on which it exerts an influence superior to any other form of light therapy that he has ever tried. In many of these cases he has used the *x*-ray and the London Hospital lamp, but mostly with indifferent results. He has also used a Kromayer quartz mercury lamp, and he has found the effects of this and the Heraeus instruments rather remarkable. They emit practically no heat at a distance of from six to eight inches, and, after an exposure of three or four minutes, they give rise to a decided bullous reaction. The effect of these instruments on certain forms of skin affections is striking and is almost remarkable in indurated and pustular acne; chronic forms of eczema and dermatitis, particularly infectious types, will be favorably influenced by a few applications of this form of light treatment. Cases of folliculitis and kerion, which resisted all forms of simple measures and rather prolonged *x*-ray treatment, yielded almost completely to one thorough application of this form of light energy. Some cases of lupus erythematosus, which baffle all other forms of treatment, *x*-ray and topical applications, have yielded very rapidly to this form of treatment. Others, however, have not been favorably influenced. Unlike Dr. Schamberg, he has not obtained any favorable influence from this form of treatment in alopecia areata, but it may be due to the fact that he did not push the treatment. In other respects his results do not differ materially from those of Dr. Schamberg, and he heartily endorses all the latter's favorable comments concerning this form of treatment.

DR. J. H. MUDGETT, Philadelphia, said that he has had considerable personal experience with light therapy, and he does not see how so many physicians, especially dermatologists, are so skeptical regarding it, and wonders whether or not they have any right to form an opinion about something they have never tried. With phototherapy it must be the same as with anything else; one must have experience with it before any opinion can be formed regarding it. Dr. Mudgett had five cases of ulcers of the leg last October which he treated successfully with an ordinary 500-candle power incandescent light, making hour exposures, and repeating the treatment every day and every other day. Some of them took two or three months to heal, but they were all long-standing cases—as long as ten years. In addition to the phototherapy he only used ordinary antiseptic applications, such as dermatologists recommend. In conclusion he suggested that dermatologists give this method of treatment a fair trial, in comparison with other methods.

DR. JAY F. SCHAMBERG, Philadelphia, said he believes that it is pretty well agreed that the treatment of lupus vulgaris remains the dominant field for phototherapy. Nevertheless, there are other dermatoses in which light treatment may be found useful. There is a distinction between phototherapy and actinotherapy. The blue, violet and ultra violet rays are not the only frequencies capable of influencing tissues. It has been shown that there is real efficacy in heat rays in certain conditions. The high-power incandescent lamps should be given a trial by competent and conservative workers. Extravagant claims have been made for various forms of light treatment which can not be indorsed. It has been shown that the penetrative power of light rays is in inverse proportion to their bactericidal effect.

Tainted Air.—The man who is 60 years old has spent 20 of those years in his bedroom. If his mind has been saturated with the old-time delusion that night air is dangerous, he has probably proceeded to make it a hundred-fold more dangerous by breathing over and over again the poisons that have been thrown off from human lungs.—*Good Health.*

BLASTOMYCOSIS IN AN INFANT.*

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IOWA CITY, IOWA.

This is a peculiar disease, from a geographic standpoint. Its home so far seems to be confined to America, and only in a few localities, largely in the Mississippi valley, if we also include the city of Chicago. The forms on the Pacific coast seem to differ from those found in other localities in the United States and are named protozoic and coccidioidal.

In cases of protozoan infection the organism develops by endogenous spore formation and not by budding,

Fig. 1.—Blastomycosis. E. J., at 8 months, showing lesion on right cheek.

Fig. 2.—Blastomycosis. E. J., at 8 months, showing lesion on left cheek.

while in blastomycosis the only way of development in the tissue is by budding. The cultures also differ somewhat from those obtained in blastomycosis.

The first case reported from Boston was in the latter part of 1906. There were no recognized cases in England up to 1903; a doubtful one was reported from Madrid the same year. I have seen three cases in the past eight years, one of them somewhat doubtful.

I am indebted to Dr. W. W. Jones for referring to

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session held at Atlantic City, June, 1907.

me the patient who is the subject of this paper and for the previous history as well as the family history.

History.—E. J., when she was four to five months old, was brought for treatment of an eruption which had appeared on her head and cheeks a week or ten days previously. The lesions consisted of patches about the size of a silver dollar, the one on the left cheek was oblong in contour, those on the right cheek and scalp were more or less circular. The patches consisted of crusts which were raised and warty in appearance, with red borders; there was a small amount of pus under the crusts and especially at the edges. In a few days other pin-head sized patches appeared around these, and formed crusts which gradually enlarged until, coalescing with the larger crusts, they formed large patches. An ointment was applied, which seemed to stop the extension of the lesions, but did not remove them. This treatment was continued for about three weeks. Then the little patient passed into the hands of a second physician, and later to a third. The disease had been named eczema, double eczema, etc. About three months later, Jan. 24, 1906, the baby was returned to the first physician and by him referred to me for a diagnosis and to recommend treatment.

Family History.—Mother of child had had two attacks of appendicitis, was of a nervous temperament, fairly well nourished, and had never had any skin lesions. The father had always enjoyed good health, and never had any skin disease. Father's mother had heart trouble. Aunts and uncles on both sides had been free from integumentary lesions.

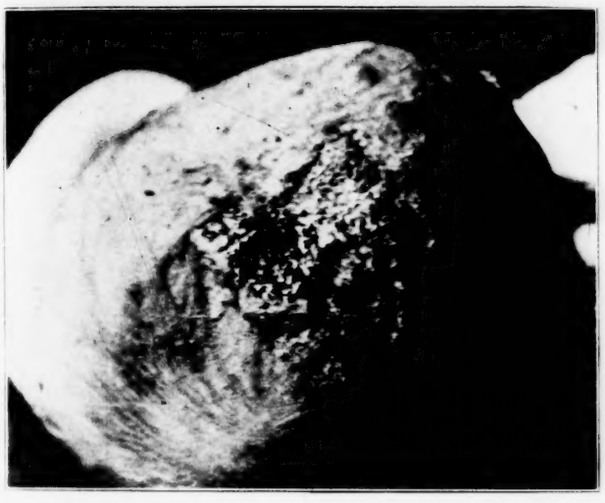

Fig. 3.—Blastomycosis. E. J., at 8 months, showing scalp lesion.

Examination.—The child, aged eight months, white, female, weighed twenty pounds and seemed to be well nourished. I found a lesion on the right cheek (Fig. 1), two and one-half by three inches in area; on the left cheek (Fig. 2); one a little larger, which was inclined to be circular in outline; one large patch on the scalp (Fig. 3), extending from the anterior of the occiput nearly or quite to the frontal bone, in width about three and one-half inches, with small split-pea sized lesions scattered from the facial to the parietal lesions, and many small patches on the buttocks and hips, which were devoid of crusts or warty appearance, but retained the red border—probably due to the contact of urine and frequent bathing. The patches on the face were elevated from one-eighth to one-fourth of an inch above the surrounding skin, the surface was covered by papilliform elevations separated by small clefts of varying depths, giving them a warty or cauliflower appearance. The borders sloped more or less abruptly from the elevated roughened surface to the surrounding skin. In color the lesions were not as dark as are those usually encountered in older patients, but were set with as many small abscesses as are usually found, but the warty projections were more delicate and a small amount of pus could be made to exude on pressure. The subjective symptoms would naturally be few in one so young, she seemed to be well nourished and nursed with a relish. When she became too warm she would scratch her scalp, indicating that it itched slightly. Removing crusts, for culture and microscopic examination, caused the little one to cry out, indicating that the lesions were very sensitive to trauma; the base was very friable and vascular.

The clinical diagnosis was that the disease was probably blastomycosis. This was confirmed by microscopic examination.

Microscopic Examination.—An examination was first made of the dry scab covering considerable portions of the lesion proper, and it was found to consist principally of serum, dead epithelial cells and the powder which had been used for treatment. This dry scab was treated with a 5 per cent solution of potassium hydroxid, but none of the specific micro-organ-

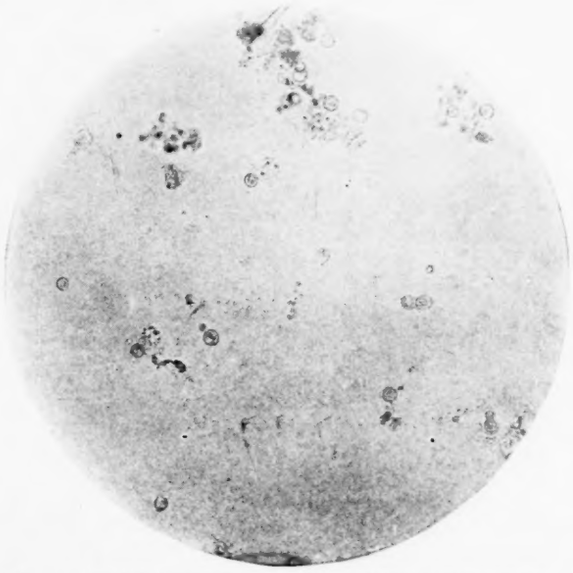

Fig. 4.—Photomicrograph showing budding blastomycetes. Objective 1/6.

Fig. 5.—Photomicrograph showing organisms in pairs. Objective 1/6.

isms were discovered. On squeezing the tissue a purulent fluid escaped. Under the microscope this was found to consist principally of pus cells, broken down tissue elements and a few blastomycetes, with some bacteria, principally staphylococci. Next a piece of the proliferating newly formed tissue of the lesion proper was grasped with a forceps and excised with a sharp knife. A part of this was used for making a microscopic section, another part for the inoculation of culture media, and a third piece was macerated in a 5 per cent. solu-

tion of potassium hydroxid. After the cellular elements had become clarified by the caustic potash, it was found that the field of the microscope was filled with a large number of spherical organisms with a double wall and varying in diameter from 14 to 20 micra. Many presented small budding processes (Figs. 4 and 5); others grew in pairs, the protoplasm of both being continuous. In such cases one of the organisms evidently presented a rather mature bud. The organisms presented a rather refractile appearance because of the clearing of the protoplasm. Pieces of the diseased tissue were placed in tubes of glucose agar and blood serum, which were then placed

Fig. 6.—Photomicrograph of section through lesion showing areas of necrosis containing blastomycetes. Objective ¾.

Fig. 7.—Same as Fig. 6 under 1/6 objective.

in an incubator at a temperature of 37 C. After two days a growth was visible which on microscopic examination was found to consist principally of blastomycetes and a few staphylococci. These were then isolated by the use of the Petri dish method and pure cultures of each obtained. The staphylococcus presented its ordinary characteristics, and was no doubt present as a contaminating micro-organism. The cultures of the blastomycetes grew well both in the incubator and at body temperature. Those made on glucose agar grew much more rapidly than those on blood serum. There was considerable difference between the cultures when grown at incubator or ordinary room temperature. In the former they remained as rather small, distinct, grayish colored, moist colonies, which on microscopic examination were found to consist principally of budding cells. On the glucose agar, however, they developed more rapidly, producing a dry, whitish woolly, elevated growth which spread over the entire surface of the medium, and which, on microscopic examination, was found to consist principally of hyphæ. The sections were imbedded in celloidin and cut 12 micra in thickness. The piece of tissue was found to consist almost entirely of epidermis, the cells of which had markedly proliferated. These consisted principally of a downward growth in the form of a wide irregular process. In many places, particularly in the deeper portions, a number of necrotic foci were found in a nest (Figs. 6 and 7) and projections of epithelial cells. These areas were filled principally with pus corpuscles and detritus of epithelial cells, and contained also a number of blastomycetic organisms.

Treatment.—Potassium iodid was recommended, as I did not think it prudent to use the Roentgen ray on one so young. There was besides, the difficulty of keeping the baby quiet when not asleep, as we found when the photographs were taken; those of the face and scalp were taken while she was asleep, the shoulder and buttocks were taken while she was awake and were destroyed. Preceding our examination it had been proposed by physicians that the child be weaned; why, I do not know, it being well nourished and stout for a babe of eight or nine months. I think it would have been a sad mistake, as we would have lost the indirect method of treatment. I took my

Fig. 8.—Blastomycosis. E. J., at 11¾ months, showing cicatrices on cheeks.

cue from the beneficial effects of treating the mother, who has a child with hereditary lues. The mother and child both took potassium iodid. A wash of formalin 2 per cent. solution was first used, then an ointment containing salicylic acid and zinc oxid with a lanolin base. The scabs softened and came away, and at the end of three weeks there was marked improvement; at the expiration of eight weeks all the scabs had disappeared, leaving only slight scars on the cheek (Fig. 8), which promise to entirely disappear in time. During the time the child was taking treatment it seemed well and grew rapidly.

My reasons for reporting this case are the geographic peculiarities, the beneficial effects of potassium iodid in the direct and indirect treatment of blastomycosis, and, last but not least, the fact that this is the youngest patient (eight months old) of which I have any record with the limited literature at my command. I am greatly indebted to Dr. Albert for the microscopic findings.

DISCUSSION.

DR. WILLIAM A. PUSEY, Chicago, said he thought the next youngest case was in a girl of 14 years, under his own care. He knew of no other infantile case reported. When Dr. Kessler first described the clinical appearances of his case, Dr.

Pusey thought that perhaps the case was one of vegetating dermatitis from pus organisms, but the bacteriologic findings, he said, leave no doubt as to the diagnosis.

The case emphasizes that blastomycosis may affect one at any age; the cases now on record range from eight months to the senile stage of life. To physicians in Chicago and in the Mississippi Valley blastomycosis is an exceedingly important subject. It is no longer a clinical curiosity in Chicago, where there have been many cases, so that even the hospital internes are acquainted with it. To many it is a source of constant speculation to learn why blastomycosis is so prevalent in our part of the country, and he thought that we are entirely ignorant on that score. It is by no means a trivial disease merely affecting the skin. Not infrequently cases of systemic blastomycosis closely simulate systemic tuberculosis. Dr. Pusey called attention to the fact that from ordinary pus infection a histologic picture may result similar to that of blastomycosis. He recently removed a papillomatous mass from the corona glandis which gave a histologic picture practically identical with that of blastomycosis. There was a dense infiltration of the corium with round cells, among which there were many mast cells and plasma cells. There was great overgrowth of the rete with down growth of intercapillary pegs, and all through the rete were to be found intraepithelial abscesses. Except for the absence of giant cells, the picture was that of blastomycosis. A number of Chicago men, familiar with blastomycosis, agreed that the picture was that of blastomycosis. Nevertheless, a rather careful search of the specimen failed to show blastomycetes. It was not difficult to demonstrate the presence of staphylococci in the tissue. Cultures made from the miliary abscesses showed no blastomycetes, but pure cultures of *Staphylococcus albus*.. The case, therefore, seems to be one which clinically and histologically is closely like blastomycosis and yet is a lesion produced by a common pus organism.

Dr. Henry C. Baum, Syracuse, N. Y., gave a summary of a case which he showed at the meeting of the American Dermatological Association two or three years ago. A colleague developed a lesion on the back of the right hand which was recognized clinically as blastomycosis, but in which the microorganisms could not be found. About three months later a similar lesion developed on the right ala nasi and the adjacent cheek, and a third lesion behind the left ear. As the diagnosis was reasonably positive, he was promptly put on potassium iodid and exposed to the *x*-rays. For a long time—perhaps six months—the treatment had no appreciable effect on the lesions, except that they did not extend. After many unsuccessful attempts, the organisms were finally found in each one of the lesions, and at the time the patient was presented, cultures were also shown, and the diagnosis was concurred in by all the members present. The case went on practically to recovery. First, the lesion on the cheek and nose disappeared, and then that on the scalp, and the hair, which had disappeared from that area, grew again. In all these patches there developed an atrophic and drawn appearance of the skin, and perhaps for a year later these patches remained soft and white and smooth. Dr. Baum thought the point of greatest interest in this case was the absolute inability to find the micro-organisms for a long time, in spite of repeated smears and cultures on various media and blood serum, although finally they were located in all the lesions. Another case that came under his observation was that of a girl 12 years old in whom the process had involved the dorsal aspect of the right calf. Another was in a woman 52 years old, with a lesion on the back of the right hand. In both of these cases there was no difficulty in finding the organism from the start. In this last case no iodin preparation was given nor were the *x*-rays used, the treatment being limited to the application of an indifferent ointment and the use of the high-frequency current from the vacuum tube. The process healed very nicely, and in less time than did that in the first case, and in any future cases that come under his observation he is inclined to try the high-frequency current before resorting to the *x*-ray.

Dr. W. T. Corlett, Cleveland, Ohio, said that the only case thought to be blastomycosis he had seen in Cleveland was not confirmed by the culture and microscopic findings after repeated trials. At one time it was thought that the characteristic budding yeast fungus had been found, but it proved to be due to the starch dressing employed. The patient has since died. The patient was shown at the meeting of the American Dermatological Association in 1906, when some doubt was expressed as to its nature.

Dr. John A. Fordyce, New York City, called attention to Dr. Pusey's remark that pyogenic organisms may produce lesions similar to blastomycosis. Two years ago, at a meeting of the American Dermatological Association, Dr. Fordyce showed some photographs which presented the clinical picture of blastomycosis, but the organisms could not be found in the lesions. There was some epithelial proliferation and cell infiltration, but the characteristic micro-organism was absent. He emphasized that giants cells are found in blastomycosis, but not in pyogenic lesions.

Dr. Jay F. Schamberg, Philadelphia, reported an error of diagnosis in regard to a supposed case of blastomycosis cutis. The patient was a man with an extensive papilllary ulcerating growth on the back of the hand. Sections of this were made and cultures taken from the pus which gave a rich growth of yeast fungus. The microscope failed to reveal the yeast fungus, but gave a general picture not unlike that of blastomycosis. On account of the histologic picture and the cultural findings a diagnosis of blastomycosis was made and the patient was treated on that basis. He subsequently grew worse, and further microscopic examination positively demonstrated that the case was one of carcinoma. An amputation of the hand was done, and carcinoma subsequently developed in the axilla, necessitating amputation of the arm and ultimately terminating in death. He felt sure that the presence of the yeast fungus was due to contamination from the air. Care is therefore necessary in diagnosis without confirmation by both histologic and cultural studies carefully pursued.

Dr. M. B. Hartzell, Philadelphia, remarked that the discussion shows that the diagnosis of blastomycosis cutis may be at times extremely difficult, and can only be definitely settled by microscopic examination. Dr. Hartzell recalled a case, which he saw about 18 months ago, in which there was a papillomatous lesion on the back of the hand which closely resembled blastomycosis. Sections and cultures from this lesion were entirely negative, and it healed spontaneously within six weeks, yet clinically it was a perfect picture of blastomycosis. Without finding the organisms of blastomycosis one is not justified in making that diagnosis.

Dr. J. B. Kessler, Iowa City, Iowa, agreed regarding the difficulties of diagnosis in some cases. When the case he reported first came under his observation, his son, Dr. J. C. Kessler, and he narrowed the diagnosis down to two affections, namely, mycosis fungoides and blastomycosis cutis. They had recently had a case of mycosis fungoides, and with the microscope they were able to establish that this case did not belong to that category, but was one of blastomycosis. Whether or not the local treatment had any beneficial effect in this case he was unable to say. Potassium iodid was administered to the mother with the idea that it might indirectly benefit the child.

Posterior Basal Meningitis Made a Notifiable Disease.—On the beginning of the epidemic of cerebrospinal meningitis in England, the London County Council made the disease notifiable for a period of six months, and up to June 18 fifty-six cases were reported. The question arose whether or not the term cerebrospinal fever included posterior basal meningitis. The Royal College of Physicians appointed a committee, which reported that intermediate cases occur in which differentiation is impracticable. No difference in the bacteriology of the two diseases has been demonstrated. The committee recommended that for notification purposes posterior basal meningitis should be included under the term cerebrospinal fever. That after notification, further details of the cases should be obtained, (a) in hospitals through the medical officers; (b) in private by a special officer available to investigate the cases bacteriologically or otherwise in association with the physician in charge.

INTESTINAL PERFORATION IN TYPHOID FEVER; ITS DIAGNOSIS AND SURGICAL TREATMENT.

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If it were necessary that one should make an apology for offering a contribution on this subject, I should say that it has been twenty-three years since Leyden first proposed the surgical treatment of this malady and Mikulicz did the first successful operation, giving to humanity the first ray of hope in a contest where death was well nigh inevitable. A year and a half ago I lost my own son from this accident. Had I made as careful a study of the diagnosis of perforation in typhoid before his illness as I have made since, I think his life might have been saved.

And so I feel somewhat like the rich man, the story of whom is told in sacred history, who, languishing in eternal punishment, looked up to Lazarus in the bosom of Abraham and implored him, if he could not come to him and ease his suffering with a cup of water, to go back to earth and warn his brothers so that his fate might not be theirs.

The scope of this paper includes a brief history of

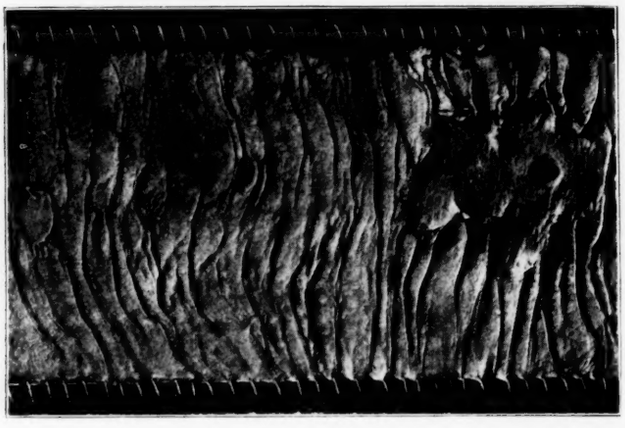

Fig. 1.—Large ulcer with small perforation and numerous small ulcers penetrating mucous coat. Typhoid fever, third week; perforation, fatal peritonitis (from specimen in U. S. Army Medical Museum, Washington, D. C.). Dr. W. C. Miner, acting assistant surgeon, U. S. Army.

the surgical treatment of intestinal perforation in typhoid fever: the presentation of some of the statistics of Keen collaborated by Wescott, Tinker, Harte and Ashhurst, of all cases operated on up to 1903; a brief analysis of the statistics of all the cases operated on from January, 1903, up to January, 1907; the diagnosis and treatment of intestinal perforation in typhoid, and, lastly, the report of my own case.

The statistics of the early operation for this accident were so discouraging that for many years little progress was made. The early statistics of Keen give a mortality of over 80 per cent. Harte and Ashhurst report the total number of patients operated on, up to January, 1903, as 362, with a mortality of 74.03 per cent. I have collected so far as possible the cases of patients operated on from January, 1903, to January, 1907, a total of 162, with a mortality of 62.34 per cent. It will be observed by these statistics that in the last four years there has been a fall in the mortality rate from 74.03 per cent. to 62.34 per cent.

These statistics are what might be expected, resulting no doubt from the fact that we are becoming more vigilant in our efforts to detect perforation at the time of its occurrence and in procuring for our patients an early operation.

The ileum is the seat of perforation in about 95 per cent. of the cases, and the perforation when in the ileum, in a majority of the cases, is within 18 inches of the cecum. Occasionally it is found as far as three feet from this locality.

The different forms of perforations are well represented in Figures 1 to 5.

DIAGNOSIS.

In the clear-minded cases where the onset is sudden, a diagnosis can be made with tolerable certainty. In the cases where stupor is pronounced and we are obliged to rely almost wholly on our own observation and on physical examination, the diagnosis is very difficult, sometimes

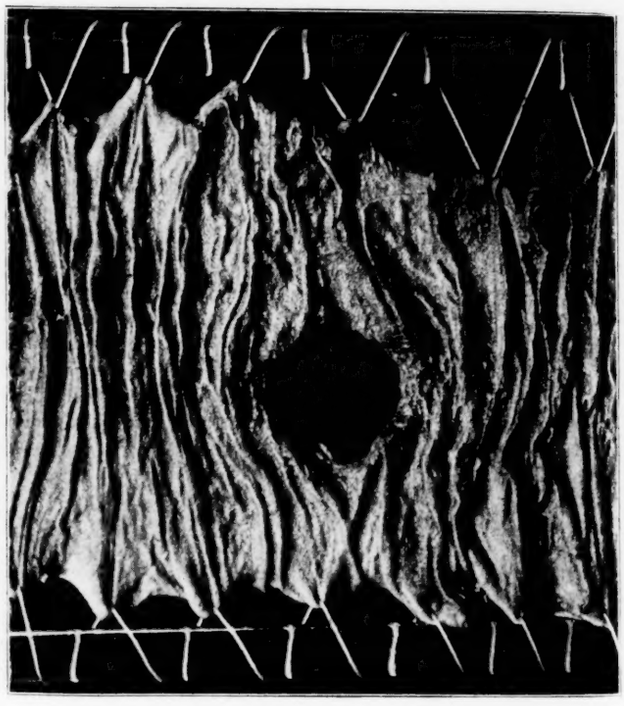

Fig. 2.—Large perforation; typhoid fever, fifth week; perforation; fatal peritonitis; soldier, aged 24, was convalescing (from specimen in U. S. Army Medical Museum, Washington, D. C.). Dr. Ely McClellan, surgeon, U. S. Army.

impossible. But in every case where the conditions indicate the probability of a perforation, we are justified in making an exploratory incision and by inspection establish a diagnosis. A long step in advance will be made when we fully realize the importance of an attempt in our diagnoses of differentiating between the symptoms of perforation and those of advancing septic peritonitis.

It is undoubtedly true that an ulcer in a Peyer's patch or solitary gland may extend to the peritoneal intestinal coat without perforating it, giving symptoms of perforation and local peritonitis; yet to make such a diagnosis and to depend on Nature to form about this spot a wall of adhesions to prevent perforation or general peritoneal infection, is as unscientific and unsurgical as to depend on Nature to perform the same office in appendicitis.

The symptoms most frequently observed after perfor

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907. This is an abstract; the full paper, including the bibliography, will appear in the Transactions of the Section and in the author's reprints.

tion are: Pain in the abdominal muscles, tenderness, increase of pulse rate and rise of temperature, nausea, chill, tympany, disappearance of liver dulness, movable dulness in the flank and a facies characteristic of shock and sepsis. According to Murphy, the symptoms of perforation are "sudden and severe pain, nausea and often vomiting, local hypersensitiveness and absence of peristalsis in the painful area."

Of all the symptoms, pain is the one most constantly present, and therefore most reliable. Yet pain may be present in other conditions in typhoid, notably in thrombosis of the iliac veins. In a series of 500 cases of typhoid observed by McCrae, pain was a symptom in 161 cases. In these cases the pain was due to perforation in 13, to hemorrhage in 13, and to other known causes in 65, but in 70 cases the cause could not be explained. In the author's case the pain appeared suddenly in the lower abdomen, causing the patient to cry out. Soon after the occurrence of abdominal pain there was an intense pain in the penis.

Hayes says: "The diagnosis of perforation is usually easy. The symptoms are so characteristic that even when the patient is a foreigner or is delirious, the diagnosis can be made just as well. The three cardinal symptoms are, however, the sudden pain, rigidity, the tenderness of the abdomen to pressure. These three symptoms being present in any case of typhoid fever, operation is indicated and demanded."

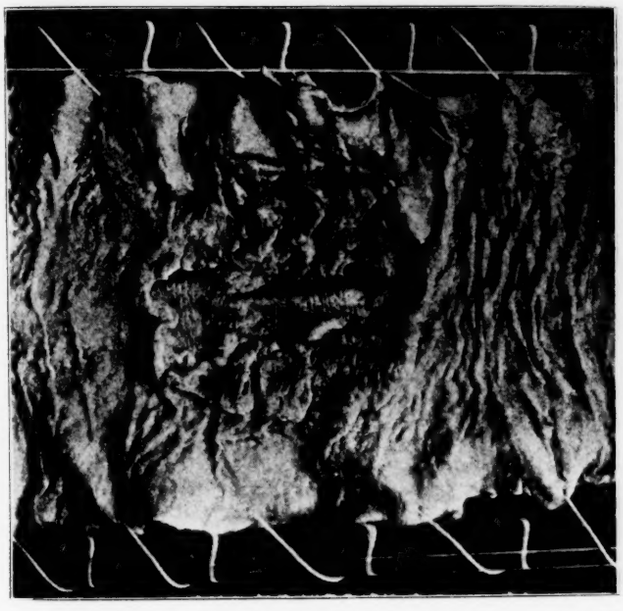

Fig. 3.—Ulcer and small perforation: typhoid fever, probably third week; perforation of ileum and fatal peritonitis (from specimen in U. S. Army Medical Museum, Washington, D. C.). Dr. Rupert Norton, acting assistant surgeon, U. S. Army.

Some writers report a fall of the pulse rate immediately after the perforation. A much more uniform condition is a marked increase in the pulse rate an hour or two after the first symptoms of perforation. In the author's case the pulse at 9:45 a. m., just previous to the time of perforation, was 98, temperature 100.6 F. One hour later, the pulse was 100, temperature 101.3 F. The pulse and temperature continued to rise for seven hours, at which time they were 108 and 105.4 F., respectively. Tenderness usually accompanies rigidity.

Regarding the leucocyte count, we must say that most authorities do not attach much importance to it as an aid to diagnosis in perforation. Cushing makes an important observation regarding this question. He says: "An individual observation at such a critical time may be misleading, in the first place, because a condition of hypoleucocytosis often is a characteristic of the fever and a count apparently within normal limits of 8,000 to 10,000 may actually represent a double increase in the number, and secondly, because by a single count the transient 'wave of leucocytosis' may entirely escape notice." It must be considered confirmatory of other symptoms rather than a positive indication for surgical intervention.

TREATMENT.

In the light of late experience the treatment of intestinal perforation in typhoid is unquestionably limited to surgical procedure.

TECHNIC OF OPERATION.

The right lateral incision is the one almost invariably selected for the operation. The appendix and cecum should be examined, and if the perforation is not located in these organs, the ileum should next be examined and then the colon. According to Keen, in ten cases of perforation of the colon, five were in the sigmoid flexure. This writer adds: "If therefore no perforation is found in the ileum, cecum or appendix, the next most likely place is the sigmoid flexure." The perforation may be closed in several tiers with the interrupted or continuous Lembert, purse-string or the mattress suture. Silk or cotton should always be used.

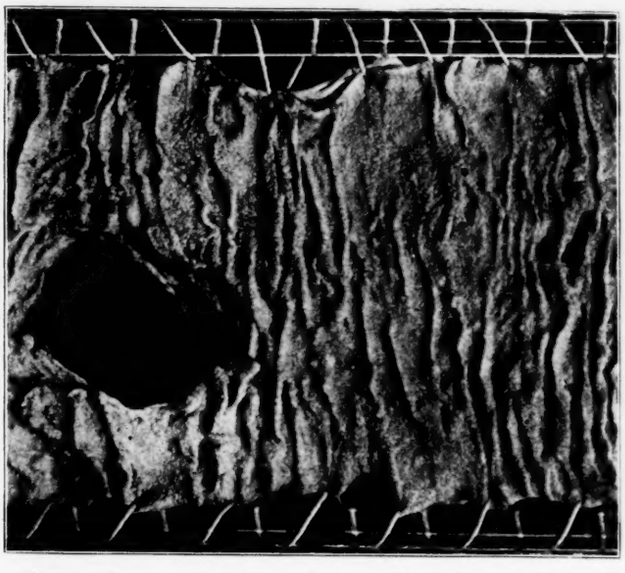

Fig. 4.—Large perforation and two small perforations: typhoid fever, third week: perforation, fatal peritonitis (from specimen in U. S. Army Medical Museum, Washington, D. C.). Dr. W. H. Forwood, surgeon, U. S. Army.

The last three feet of the ileum should be examined for other perforations or for thinned ulcerated surfaces threatening perforation, and such surfaces inverted by suture in the same way as for perforation.

As to the best method of dealing with the extravasated material in the peritoneal cavity, there is considerable diversity of opinion. Some employ extensive flushing of the cavity with physiologic saline solution until the fluid flows away clear; others recommend thorough cleaning away of this material by dry sponging; a few decry any attempt to remove the pus and intestinal extravasations as a useless waste of time, endangering to a greater degree the patient's chances for recovery.

In a vast majority of these cases, we are dealing simply with a general septic peritonitis in typhoid which

differs in no essential particular from the treatment of the same condition in perforating gastric or duodenal ulcer, perforation of the intestine from any cause of perforating appendicitis. The most rational procedure it seems to me has been evolved by Dr. J. B. Murphy for the treatment of general septic peritonitis, which embraces the following principles:

1. Rapid execution with the smallest amount of work possible in the abdominal cavity consistent with the exigencies of the case.

2. The avoidance of every procedure calculated to favor the extension of infection or absorption of bacteria, such as mopping away débris and lymph deposits on the intestines and flushing the abdominal cavity.

3. The providing for thorough drainage by rubber tubes and posture (Fowler's position).

4. The elimination of toxins.

Having disposed of the intestinal perforation and drainage tubes, I think we should not stand longer on ceremony, but get out. The lymph deposits from the intestines should not be mopped off, nor the abdominal cavity flushed out in any case. The first procedure is positively harmful, and the latter an unnecessary waste of time and probably more likely to spread infection than to limit or eliminate it.

It is not the perforation that causes the most profound symptoms we observe in septic peritonitis. These symptoms come on some hours after perforation, when the intestine has become denuded of its endothelium, so that there is rapid absorption of bacteria and of septic material.

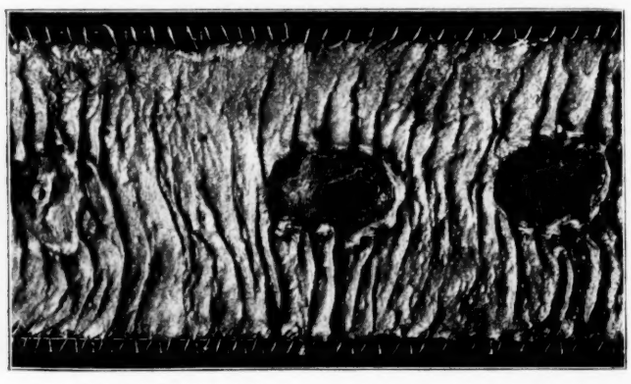

Fig. 5.—Multiple perforation in large ulcerated surfaces; typhoid fever, third week; perforation; fatal peritonitis (specimen from U. S. Army Medical Museum, Washington, D. C.). Dr. H. M. Dean, acting assistant surgeon, U. S. Army.

In this connection the experiments on animals by Dr. B. H. Buxton on the processes of absorption in the peritoneal cavity are of intense interest. These experiments prove that if micro-organisms, like the typhoid or colon bacillus, are introduced into the peritoneal cavity, they soon appear in the blood, being absorbed almost wholly through the lymphatics of the diaphragm. Absorption of bacteria occurs but little, or not at all through the parietal, visceral or mesenteric peritoneum. Flushing of the abdominal cavity, therefore, carries the bacteria toward the diaphragm, where they are readily absorbed.

The profound toxic effects do not appear, however, for about two hours, at the end of which time the bacteria are destroyed and through this process of disintegration liberate their "endotoxins" in the blood. We have, therefore, instead of shock an overwhelming of the system by intercellular toxins.

In treating the peritoneal conditions present in typhoid perforation, therefore, we should place the patient in the Fowler's position and avoid irrigation which tends to promote absorption of bacteria. After closing the perforation, drainage is procured by placing several good-sized drainage tubes deep into the pelvis.

Elimination is encouraged by proctoclysis in the following manner: A fountain syringe containing one and a half pints of warm physiologic saline solution is hung at such a height that the fluid by force of gravity will issue from the tube by constant dropping or in a very small stream when the tube is passed into the rectum. The flow must be controlled wholly by gravity and the elevation will depend on the degree of abdominal tension which will vary in each case (Murphy).

If the flow of the saline solution is controlled entirely by gravity, the intestinal gases will pass out through the tube and be expelled through the solution in the syringe. If straining occurs the fluid in the rectum will be forced back into the syringe and not into the bed and will return again to the rectum. The administration of salt solution should be repeated every two hours for a period of three or four days.

Dr. Murphy says: "I have given as high as 30 pints in twenty-four hours to a child 12 years old. In the last, my forty-first, case of perforative peritonitis, we gave 18 pints of salt solution each twenty-four hours for eleven days, and none of it was expelled into the bed."

Keeping the patient in the correct Fowler position by the ordinary shoulder rest and bolstering up with pillows is a very difficult, and it seems to me, impossible thing to do. There is a constant tendency, especially in weak individuals, to slide down into the bed. Many times when the patient appears to be in good position an examination will prove that it is a deception. The shoulders will be well up on the rest, but the body will be found bent at the costal arch and the abdomen will be on a plane parallel with the surface of the mattress. To obviate this, I have had constructed a simple device[1] which seems to keep the patient in this position without constant vigilance on the part of the attendant (Fig. 6).

Fig. 6.—Double inclined plane, shoulder and leg rest for Fowler's position; patient in position.

TIME OF OPERATION.

The late experience of surgeons is that in those cases in which the patients are operated on after the first twenty-four hours, a majority die, while of those patients operated on within the first eight hours, a majority live. Of 162 patients operated on since 1903, whose history I have collected, the time of operation is

1. While talking with Dr. James M. Neff, of Chicago, about some device to maintain the patient in the Fowler position he suggested that an apparatus constructed on the principle of the double-inclined plane would be ideal. Acting on this suggestion I had manufactured by the Weyburn Company, Rockford, Ill., this shoulder-rest, with double inclined-plane extension.

known in 81. Those operated on within the first eight hours had a recovery rate of 54.54 per cent.

The treatment may thus be epitomized:

1. Lateral incision through right rectus or linea semilunaris as for appendectomy.

2. Systematic search for, and suture of, the perforation.

3. Placing of drainage tubes.

4. Partial closure of wound without irrigation or mopping in the peritoneal cavity.

5. Treatment by posture to confine bacteria and septic material to lower abdomen (Fowler's position).

6. Treatment calculated to destroy or impede the growth of bacteria already in the blood and tissues: Antistreptococcic serum, unguentum Credé.

7. Supportive treatment: Nourishment, strychnin and digitalin hypodermatically.

8. Elimination: Physiologic salt subdermally (temporarily) when indicated for failing heart; proctocylsis continually, until sepsis is overcome.

REPORT OF CASE.

The case I report is that of my own son, and is remarkable in that three laparotomies were performed during a run of typhoid fever of fifty-one days. This is the third or fourth case reported in medical literature, I believe, where more than one laparotomy has been performed for intestinal perforation and its sequels in typhoid fever.

History.—Ernest S. A., male, aged 17. The illness began without prodromal symptoms, Sept. 27, 1905. The first symptom was a severe chill; an hour later the temperature was 103 F.; slight epistaxis during first week; on the thirteenth day a slight intestinal hemorrhage occurred. Two days later, after an enema was given, the patient was seized with a pain in the lower abdomen, causing him to cry out; at the same time he complained of an intense pain in the penis. Perforation was suspected and consultation held. Operation deferred. Previous to these symptoms the pulse was 98, temperature 100.6 F. Seven hours later the pulse was 108, temperature 105.4 F.

First Operation.—Operation Oct. 5, 1905, by Dr. Murphy's associate, Dr. James M. Neff, thirty-seven hours after perforation. A perforation the size of a lead pencil was found in the ileum, 12 inches above the cecum. Perforation repaired, drainage without sponging or irrigation in the peritoneal cavity. The patient recovered from this operation. A fecal fistula developed at the site of the drainage tube about a week later.

Second Operation.—Nineteen days later, October 27, a second operation was performed by Dr. Neff for suspected pus pocket. A few adhesions among the intestines were broken up, but pus pocket was not located. Wound closed with rubber drain. Patient rallied from the operation well and gradually improved. Most of the bowel movement passed through the fistula at this time. On November 10 the record shows the patient had had ten days' normal temperature. During the forenoon of this date he suffered from a sudden pain in the upper abdomen. Some distension in this region and discharge from fistula greatly diminished. Intestinal obstruction feared.

Third Operation.—On November 11 an operation for intestinal obstruction was performed by Dr. Neff. Incision through left rectus above umbilicus. Operation revealed a kinking of the small intestine caused by a fibrous band. Obstruction relieved immediately by dividing the band. Patient died eight hours later.

Autopsy.—A partial autopsy was made of the abdominal viscera. The fecal fistula was at the site of the perforation in the ileum, the stitches having given way, allowing a reopening of the perforation. Deep in the left pelvis circumscribed by exudate and adherent coils of intestines, an abscess was found containing from four to six ounces of very offensive pus.

DISCUSSION OF CASE.

It is evident that from the beginning the case was one of virulent typhoid infection. This is indicated by the sudden onset of the fever following a severe chill, which was the first symptom of illness. Had the patient been operated on within a few hours after the perforation was suspected, I believe there might have been a favorable termination. An early operation would have greatly limited septic peritonitis, which caused intestinal obstruction from adhesions.

There is one feature in the case about which I have not spoken. There was a perforation in the cecum which was plainly visible as this organ lay in the lower angle of the partially closed wound made at the first operation. There was no fecal discharge through it, although the semi-solid feces could be seen plugging the opening.

Had the case progressed favorably, it is not at all likely that this perforation would have caused any trouble. It probably would have healed spontaneously. If it had discharged the contained feces, it would have been received outside of the peritoneal cavity. The intestinal obstruction should have received earlier surgical attention. Yet one may be pardoned for hesitating about entering the peritoneal cavity the third time in the course of typhoid fever.

The question of the ultimate termination of the deep pelvic abscess, had life continued, is a more difficult one to decide. I am convinced that this was not a pus-pocket resulting from septic peritonitis, but an independent focus of typhoid infection having its origin in a mesenteric gland. It was not confined by the coils of intestines, but by a thick wall of exudate in the mesentery region. In its location, it was evidently doing no harm, being hemmed in by a protective wall of exudate, and possibly the contained micro-organisms had lost their virulency. It might have been safely discharged through one of the abdominal wounds.

In spite of the late operation for perforation, the septic peritonitis had been entirely overcome, for the patient had subsequently ten days of practically normal temperature. The management of the case after operation was that described in the text of this paper under treatment.

If I have succeeded in any degree in awakening an interest in this subject, that its importance deserves, I shall feel that my boy has not lived and died in vain.

DISCUSSION.

DR. JOHN B. MURPHY, Chicago, emphasized the time of operation. Can one save the patient with typhoid perforation? Yes, if operated on in time. No, if one waits until such time as the patient is in a condition that contraindicates operation. All of the symptoms indicating operation were, he said, clearly and concisely stated by Dr. Allaben; namely, the pain, the local hypersensitiveness, the nausea, the vomiting, the elevation of temperature above that which the patient had before, and, finally, the hyperleucocytosis. In a recent epidemic of typhoid in Chicago, the hyperleucocytosis was absent in a considerable number of the cases, while the other symptoms were present almost invariably, and in the order mentioned. The question of collapse, Dr. Murphy said, is the most important one and the most difficult one to eradicate from the average practitioner's mind. Collapse has so long been recognized as indicative of perforation in the peritoneal cavity that it is difficult to persuade ourselves that collapse is not an evidence of perforation into the peritoneal cavity, but of absorption of an excessive quantity of sepsis produced by the perforation into the peritoneal cavity. By waiting for collapse as a symptom indicative of perforation, one will miss the only time when it is possible to rescue the patient from

the complication of his typhoid. As to the diagnosis: Dr. Murphy stated that the diagnosis can be made and should be made timely, by observing the symptoms present. Then, the diagnosis made, action should be forceful and prompt. All surgeons, he said, regret the time when so much was done in the peritoneal cavity in cases of perforation. Since then it has been found that disturbance of the peritoneal surface is a detriment. Surgeons have learned, furthermore, from the most excellent experiments made recently, that the fluid which Nature throws out into the peritoneal cavity, and which is considered to be pus, is often a prophylactic fluid that saves the patient's life. It is known, however, practically, whether the theory is right or wrong, that if that fluid is permitted to remain, as a rule, the resistance in these cases is sufficiently great to save the life of the patient, with the assistance of drainage and with the further assistance of a closure of the perforation. It is not sufficient to drain the peritoneal cavity in the presence of perforation of any kind, and this is shown most strikingly in connection with perforation from the duodenum, the most favorable place of perforation as far as septic peritonitis is concerned. It was found that in nineteen consecutive cases of perforation of the duodenum in which only drainage was instituted, eighteen patients died immediately and the remaining patient died four or six weeks afterward. This is particularly true where the opening in the alimentary canal is low down, where the sepsis of the intestinal contents is greater than in the duodenum, and that is an indication that one should, in this operation, always close the opening.

The details of the after-treatment Dr. Murphy referred to briefly in connection with one statement made by Dr. Allaben. He gave the details of the after-treatment as carried out by Dr. Murphy in four typhoid perforations and in forty-one consecutive cases of general suppurative peritonitis from perforation of the alimentary tract. In these forty-one cases there were forty cures and one death. These details are important, tiding the patient over the acute hour of sepsis, which is immediately after operation, by washing out the blood by means of a large quantity of fluid administered by internal clysis. The method of taking it is the most difficult of all things in surgery, to impress on the average nurse or on the average man the manner of using it. It must be admitted by pressure alone, and through a tube that will let the water flow in and out, and the hydraulic pressure must just exceed the abdominal pressure. It must not be done by placing the container seven or ten feet above the patient, with a forceps attached to the tube letting the water drop down. It must flow freely in and out, and when given in that way, the fluid is rarely rejected. In the operative treatment, Dr. Murphy said, it is very important to do as little work as possible. Open the abdomen, find the opening and close it. He emphasized the importance Dr. Allaben laid on searching the large intestine for an opening. One should not go out of the abdominal cavity in a perforative case until the opening is closed, or the time will be wasted and the patient will be lost.

DR. L. J. HAMMOND, Philadelphia, expressed his belief that it is in the prophylaxis of perforative peritonitis that the hope of lowering the mortality lies. Following out this line of thought, he has during the past three years endeavored to learn the condition of the abdominal viscera of subjects dying from typhoid fever from causes other than perforative peritonitis, and in no instance has he, either from postmortem findings or from histories and hospital records of cases been satisfied that a single case of perforation took place in a subject whose bowels were free from adhesions. He further demonstrated, to his own satisfaction at least, that in every instance of perforation there was pronounced evidence of preexisting disease of the intestines, which was shown by the presence of adhesions more or less extensive, and more often found to be the result of present or past appendicitis, though in some instances other of the abdominal viscera had been the cause of these adhesions, especially those found about the hepatic, gastric and splenic flexures. From these observations, Dr. Hammond was led to the conclusion that it is extremely doubtful whether perforation ever takes place from typhoid fever in subjects whose intestines are free from adhesions. He thought that Dr. Allaben's case confirmed this belief. It seems self-evident, he said, that a bowel anchored by adhesions would suffer perforation where an ulcerative process attacked the glands in its mucous surface, and where it is still further helped along by a general impairment of tissue resistance, as occurs in this grave disease. If this position is correct, there is every reason to believe that a very decided lessening of mortality can result from prophylactic treatment. Clinicians claim that during the early stage of typhoid fever, that is, up to the seventh or ninth day, there should be no abdominal symptoms; that is, the abdominal symptoms do not appear until the bacillus has become deposited in the Peyer's patches. Given a case, therefore, where in the first week of the disease, abdominal symptoms, especially tenderness with distension, are pronounced, it would seem rational to conclude that pre-existing disease of the intestines existed, and if a reasonably certain diagnosis can be made, an exploratory incision should be justified for the purpose of removing the cause and freeing the intestines of their adhesions, which should enable them the better to withstand the ulcerative process.

The importance of such an operative procedure was most impressively brought to Dr. Hammond's attention in the case of a woman, about 30 years of age, whose intestine perforated during the third week of typhoid. The operation, which was performed a few hours after the diagnosis of perforation had been made, showed the existence of not only a perforation of the ulcer, but a complete rent in the bowel that severed the lumen transverse to its long axis down to its mesenteric attachment and the caput-coli, while several knuckles of the lumen were imbedded in the massive old adhesions from pre-existing appendicitis. In a second case, where a tentative diagnosis of typhoid had been made, the physician was much concerned about the accuracy of his diagnosis because of the continuous and increasing abdominal pain and distension. On the sixth day there could be felt to the right of the hypochondrium a mass, which was decidedly tender on palpation. The patient was very tympanitic. Operation was advised. An incision was made under ether anesthesia on the next day. The appendix was found firmly adherent posteriorly and there was much agglutination of the coils of the ileum on the right side. The appendix was removed, the intestines freed of their adhesions and the patient went through her typhoid fever without complications.

One would naturally expect that such an impairment of bowel function as was present in this case, if it did not actually cause perforation, would certainly contribute much toward its occurring. There is every reason to believe that when adhesions of the intestines exist, the normal function of the bowel is disturbed through interference with the fecal current and alteration in the circulation, both of which should be regarded as distinctly favoring, if not absolutely causing, perforation.

DR. WILLARD BARTLETT, St. Louis, said that in three instances he brought the perforated area to the surface and stitched the intestine to the abdominal wall and left a fecal fistula to form; and two of his patients are well now. One was hopeless at the time of operation. It takes only two minutes to do this, and neither a surgeon nor a hospital is required.

DR. ROBERT T. MORRIS, New York, thought it worth noting that a patient may sometimes recover after perforation of the bowel in typhoid without operation. He has seen one case in which after perforation had occurred, the bowel contents had escaped and had become encapsulated. About six months after the patient had recovered from his typhoid, he operated for angulation and perforation of the bowel at the site of the old adhesions and found this encapsulated fecal mass. Of course, he does not believe in waiting for that sort of thing to occur. He believes that the quickest thing to do is the best—to make a diagnosis early and bring the perforation to the abdominal wall as quickly as possible. Get in and get out. Do it all in two minutes.

DR. W. A. BATCHELOR, Milwaukee, Wis., referred to one case of typhoid perforation which illustrates several points

brought out—the early diagnosis and early operation. This case occurred in the third week. The first symptom to suggest perforation was abdominal pain, occurring about 7 o'clock in the morning. The man was operated on at 3 o'clock of the same day in his house, after very careful preparation of the room and the securing of assistants, nurses, etc. The perforation was found about eight or nine inches from the ileocecal valve, a small round perforation such as would be made by a 22-caliber rifle bullet. After closing the perforation with Lembert sutures, it seemed that the lumen of the gut had been so much encroached on that there was danger of obstruction. Dr. Batchelor cut out the stitches, took out the threads and made a circular purse-string suture, which seemed to close the opening satisfactorily and with a less degree of narrowing of the lumen of the intestine. The man recovered, and in the subsequent treatment Dr. Batchelor made use of the saline solution, something as suggested by Dr. Murphy, but not so much with the idea of washing out the bowel as to bring in nourishment. The saline solution was put in by means of a fountain syringe, and the discharging pipe was clamped off. The solution was admitted drop by drop and was used constantly. It seemed to take the place of nourishment and of drink and worked satisfactorily. Another little thing in connection with this was that the anal pipe was a small catheter, on the supposition that anything larger would be expelled; but with a small catheter inserted, 16 to 18 size, the sphincter seemed to be very tolerant. Dr. Batchelor emphasized the two points, the early diagnosis and the prompt and quick operation, and he thinks that the sudden onset of pain and the restricted abdominal motion are the two points one would rest most largely on in making a diagnosis. He considers those two symptoms of far more importance than changes in the pulse rate and temperature.

DR. J. E. ALLABEN, Rockford, Ill., said, in regard to the symptoms about which Dr. Murphy spoke, that it has generally been considered that those symptoms are caused entirely by the absorption of septic material. The experiments of Buxton demonstrate that it is usually not the absorption of septic material but the absorption of large quantities of bacteria, which undergo disintegration in the blood and liberate their endotoxins, producing the symptoms of shock and collapse. Regarding Dr. Hammond's remarks, Dr. Allaben did not see how he had any foundation for saying, so far as this particular case is concerned, that there was intestinal disease previous to the typhoid fever. He did not agree to that, because there had been no indications of intestinal disease at any time before the attack of typhoid, and he did not believe that intestinal disease ever existed. The perforation undoubtedly occurred from the ulceration of a solitary gland caused by infection from the typhoid bacillus. With reference to Dr. Fox's patient who died from neglect to open an abscess, Dr. Allaben suggested that the case was one of appendicitis complicating typhoid fever. The appendix is often infected in typhoid by the typhoid bacillus, and it must be apparent to all that appendicitis may complicate typhoid, a simple appendicitis occurring in the course of typhoid. That is one of the things one must look for, and operation in such cases is always followed by excellent results. Regarding Dr. Bartlett's suggestion to stitch the perforation of the intestine into the abdominal wound, he thought that this procedure might be satisfactory if one could be sure that there is but one perforation. Other perforations may be present and be overlooked. Again, obstruction might be produced by kinking of the intestine. In all cases of septic peritonitis, the formation of adhesions is avoided by early evacuation of septic material. Adhesions are caused by the advancement of septic peritonitis. By operating early, these adhesions are limited.

Surgical Treatment of Goiter.—Dr. George A. Bingham, Toronto, in his presidential address before the Ontario Medical Association, May, 1907 (*Canada Lancet*, July 1907), states that in goiters affecting both lobes his experience has shown that it is not enough to remove one lobe and the isthmus, as cystic degeneration will continue in the remaining lobe. It would seem to be safer, after having removed the lobe most affected, with the isthmus, to incise the capsule of the remaining lobe and to enucleate every cyst to be found.

A CASE OF INFANTILE MYXEDEMA.

JAMES FREDERICK CLARKE, M.D.
FAIRFIELD, IOWA.

The case here presented is the fourth of sporadic cretinism brought to my attention in this part of Iowa. Such a number found in a limited territory inclines me

Fig. 1.—The child at beginning of thyroid treatment, March 18, 1906.
Fig. 2.—Profile of child, March 18, 1906, at beginning of treatment.

Fig. 3.—Child after less than seven months' thyroid treatment, Oct. 4, 1906.
Fig. 4.—Child after fourteen months' treatment, May 27, 1907.

to the belief that the condition is much more frequent in the United States than is commonly supposed.

Patient.—P. Z., male, aged 18 months, was sent to me by Dr. C. S. Bishop of Glasgow, Iowa.

History.—This boy was the fourth child, of German parents who are first cousins. All other children of the family are normal. The baby weighed ten pounds at birth (Oct. 26, 1904), fourteen pounds when two months old, and sixteen pounds when eight months of age. There was obstinate constipation from the second month, and when nine months old the baby became deeply jaundiced and remained so for several months. An umbilical hernia developed at the same age. From the age of 9 months there had been neither growth in heighth nor development in any way except the cutting of two lower incisors at 13 months.

First Examination.—March 18, 1907. The condition at 18 months of age is shown in the accompanying illustrations (Figs. 1 and 2). There was myxedema, inability to stand or sit alone, and an expression of imbecility. The height was 26¼ inches and the weight 17 pounds 6 ounces. The fontanel was open; the hair harsh and worn off except on the top of the head. The skin was dry and sallow. The lower two incisors were the only teeth present. The tongue did not protrude. The legs were bowed and the abdomen prominent. The child never spoke and did not cry aloud. It was difficult to attract his attention but occasionally he smiled. He slept only at night.

Treatment.—Thyroid feeding was begun March 18, 1906, by giving one-quarter of one two-grain tablet three times a day. For more than four months this amount could not be increased without making the baby nervous and sleepless. Improvement began at once and has been continuous.

June 1, 1906: There were four teeth, new soft hair, and the baby was able to sit alone.

Oct. 4, 1906: He had fifteen teeth, weighed 24 pounds, and could stand alone. The photograph (Fig. 3) of this date shows a loss of the myxedema and a marked change in the facial expression.

May 27, 1907: The weight was 28 pounds; there were sixteen teeth. The baby had been walking for a month and could speak several words. He was apparently in a normal condition (Fig. 4), growing and developing as do other children, and while taking one two-grain thyroid tablet a day continuously, there is every reason to believe that he will continue to develop as a normal child.

BIER'S TREATMENT ("STAUUNGS-HYPERÆMIE") IN CHRONIC AND ACUTE SURGICAL INFECTIOUS DISEASES.*

WILLY MEYER, M.D.

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NEW YORK CITY.

Principally for the sake of starting a discussion in our Section on a subject that has been so thoroughly ventilated by surgeons abroad, particularly in Germany, during the last few years, I am going to make some remarks on Bier's *Stauungs-Hyperæmie* in the treatment of chronic and acute surgical infections.

Ever since it was first published,[1] in 1892, I have used Bier's method whenever indicated, and have made many interesting and surprising observations. Little has so far been written about the subject on this side of the Atlantic.

We have with us to-day Dr. V. Schmieden, who, on May 7 of this year, as representative of his chief, Prof. A. Bier, on invitation of the Surgical Section of the National Association for the Study and Prevention of Tuberculosis, read a paper on "The Treatment of Bone and Joint Tuberculosis by *Stauungs-Hyperæmie*" before its third annual meeting, held at Washington, and I am glad to avail myself of this opportunity to report to you my own experience with Bier's treatment, gathered within the last fifteen years.

The idea of making use of an increased volume of blood in and around the diseased focus was conceived by Bier during his studies of the observations of the late Prof. v. Rokitansky, the renowned Viennese pathologist, who found that patients who had suffered from stasis in the pulmonary circulation, due to heart disease or curvatures of the spine, never showed an active tuberculous lung affection on postmortem examination. On the other hand, it had been often seen that patients suffering from diseases of the heart, that produce a certain amount of anemia of the lungs (stenosis of pulmonary artery) are especially subject to tuberculous disease of the lungs.[2]

Bier's first attempts at the surgical clinic in Kiel, Germany, with active (arterial) hyperemia, by means of prolonged hot baths, or, locally, by means of the application of glass cups (suction method, cupping) proved unsatisfactory. He, therefore, tried the elastic rubber bandage, which his chief, Prof. v. Esmarch, had so successfully made use of for producing artificial anemia in cases of amputation and other operations on the extremities. Winding the elastic bandage gently around the limb above the seat of the disease, the thin-walled veins were naturally much more readily compressed than the firmer arteries, and while the latter continued to pump blood into the parts below the constriction, the return of the blood thus became interfered with; a partial stasis of venous blood was produced and could be maintained at will. This is the nucleus of the so-called "Bier's treatment" by means of the elastic bandage.

Fully appreciating the significance of the principle discovered, an original worker of the stamp of Bier was not to be baffled by difficulties. He clung to the further elaboration of his idea, practically applying it on the extensive material offered by the surgical clinics at Kiel and later Greifswald, to which latter place he was soon called as chief of clinic.

After a few communications, scattered in German weeklies, he published his well-known book on *"Hyperämie als Heilmittel"* (hyperemia as a therapeutic agent) in 1893. But in spite of the wealth of new and interesting observations brought out in his book, comparatively few surgeons, seemed to avail themselves of the advantages of the method, at least judging from the scanty contributions to the literature of the subject. Only a few men in the surgical world raised their voices in favor of it, among them the late v. Mikulicz. Undaunted by this seeming indifference on the part of the profession, Bier and his assistants again and again pointed out the benefit to be derived by the treatment. In spite of all his excellent work, it is, however, quite possible that the method would never have attained to its present general recognition had not Bier, especially since his call to Bonn to succeed the renowned Schede as chief of the surgical clinic, with wonderful tenacity and courage, extended the use of artificial hyperemia to inflammatory surgical infections of *acute* character, thus overthrowing, as it were, all time-honored views as to inflammatory processes and their surgical treatment by ice, elevation and rest. Since then the interest in Bier's work has been steadily and rapidly growing. Only a short

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* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Verhandl. der deutschen Gesellsch. für Chirurgie, 1892, vol. I, p. 91.

2. Farre and Travers, 1815; Louis, 1826; Frerichs, 1853.

time ago Bier's book, above referred to, passed through its fourth edition, and hardly had this appeared when a fifth edition became necessary. The literature of the subject has, by this time, become very voluminous and is growing with phenomenal rapidity. Czerny, of Heidelberg, who, in a masterly address,[3] presented Bier with the Kussmaul prize in August last, has heralded Bier's discovery as one ranking with Lister's discovery of antisepsis. At present there is hardly a surgical clinic, city hospital or dispensary abroad that does not employ Bier's methods, all the more since his assistants and collaborators, principally Professors Klapp and Schmieden, aided by the ingenious surgical instrument makers, the two Messrs. Eschbaum, of Bonn, have advanced its utility by constructing a great variety of useful glass apparatus for active hyperemia (suction method), and have successfully extended the hyperemia induced by dry heat, also Bier's original discovery, to the treatment of many, formerly rather intractable, chronic, medical and surgical affections. And now Bier adorns the chair of surgery at the University of Berlin, made vacant by the death of the illustrious Ernst von Bergmann.

This discourse on the history and development of Bier's treatment seemed to me necessary for an intelligent understanding and discussion of the subject.

Now, I will not tire you by relating at length the observations made by others and myself along these lines; but, just to illustrate the benefit that may be derived from Bier's discovery in a typical case of

Figure 1.

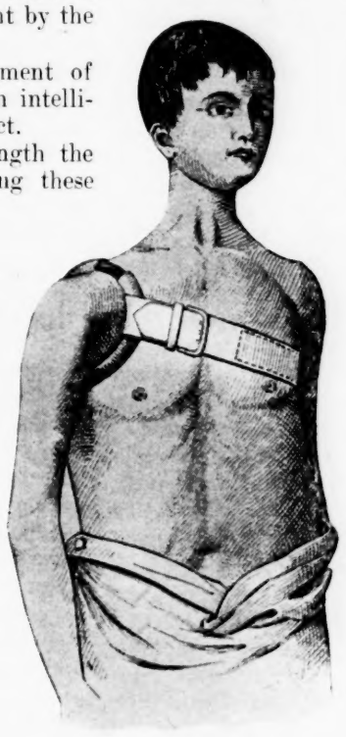

Figure 2.

Figure 3.

(From Dr. Bier's book on his hyperemia treatment.)

I. CHRONIC SURGICAL INFECTIOUS DISEASE.

I will briefly report the history of a patient afflicted with tuberculosis of the elbow joint:

In the fall of 1893, a man, 45 years of age, member of the New York fire brigade, came to my clinic at the Postgraduate School with an advanced tuberculosis of the right elbow joint. He entered the lecture room, supporting the hand of the diseased arm with the other hand, on account of severe pains. The extremity was in the pathognomonic position, flexed at an angle of about 110. Every typical symptom, including hereditary predisposition, was well developed. There was not the slightest doubt as to the nature of the disease. Having seen favorable results in other cases of tuberculosis of the extremities from the new method, I was, naturally, eager to try it again in this case, all the more as the disease had become far advanced and the prognosis as to functional result after resection of the elbow, in a patient near the fifties, was rather unpromising. I intentionally abstained from employing either of the other two aids in the conservative treatment of tuberculous affections of the extremities then known, i. e., splint and parenchymatous injections of a sterilized solution of iodoformglycerin. I thus made use of the bandage alone. It was carefully applied at the clinic and the patient, as well as his wife, received full and repeated instructions regarding its use. They were shown how the bandage had to cover a certain portion of the arm, one layer to overlap the other. (Fig. 1, taken from Bier's book). They were told to be sure that the pulse at the wrist could always be felt with the bandage in position; that the pains were to be diminished and not increased by its use; that the forearm be warm, not cold; that the bandage was to remain in position for 11 hours, then to be removed, so that the portion of the arm that had been subjected to the compression could be thoroughly massaged, in order to guard against pressure atrophy; and then to reapply the bandage 1 or 1½ inches further up or down the arm. In other words, the bandage was to wander up and down between elbow and shoulder joint. The patient faithfully carried out this treatment. Two weeks later he again entered the clinic, this time without supporting the hand. He had lately passed comfortable nights and the pain had much diminished. To make a long story short, after nine months of continued treatment by means of *Stauungs-Hyperæmie* with the elastic bandage, no other treatment having been added, the patient had a useful arm and returned to his work as fireman—surely a brilliant result. He was told to continue the treatment a few hours every day, for several months.

I presented the man and three other successful cases illustrating "The Results of Bier's Method in the Surgical Treatment of Tuberculous Joint Disease," selected from the cases that I had so far treated on these lines, before the Orthopedic Section of the New York Academy of Medicine,[4] on Dec. 20, 1895. He then had such good use of his arm that one of the members felt called on to express doubt as to the correctness of the original diag-

3. Deutsche med. Wochschr., 1906, No. 11, p. 426.

4. Transactions of Orthoped. Section, Library, Acad. of Medicine.

nosis. But, of course, it had been a case of true tubercular joint affection.

I could cite many more cases of tuberculous disease of the various joints and bones of the extremities that were successfully treated by me in the course of the last fifteen years, many of which have been presented before various medical meetings. Especially gratifying were a number of cases of advanced wrist infection in the young and old, which, when finally cured, compared most favorably with the functional results obtainable by means of resection. In fact, some of these cases would undoubtedly have ultimately required amputation of the forearm had the old form of treatment been pursued. In two of these cases a cold abscess developed in and between the tendon sheaths of the volar flexors at the wrist; one or more aspirations of the pus plus injections of iodoform-glycerin emulsion (5 per cent.), done (under local anesthesia) at the Postgraduate and German hospitals, effected a cure.

At the present time, as Dr. Schmieden has stated in his address referred to above, such cases are treated at the Bonn Clinic with small incision and the application of the glass cup, in addition to the continued use of the elastic bandage. However, at the time when my cases called for relief this latter treatment had not been so fully developed as it is now, thanks to the excellent work since accomplished by Bier's foremost collaborator, Prof. R. Klapp.[5]

If the *x*-rays showed great destruction of bone, as in the so-called spina ventosa of the phalangeal or metacarpal and metatarsal bones, or, e. g., in tuberculosis of the tibio-tarsal joint, due to primary disease of the astragalus, I have in quite a number of cases operated by opening and cleaning the bones of their tuberculous deposits in the former, or removing the astragalus and excising the tuberculous synovialis of the foot joint by open operation in the latter. The often resulting obstinate sinuses then usually yielded in a most gratifying manner to the elastic bandage—lately combined with suction by glass cups—much better than by repeated scraping and cauterization, as formerly practiced.[6]

Tuberculous affections below the elbow are treated to advantage with the bandage applied around the arm. For the shoulder a special apparatus is needed, as shown by Figures 2 and 3, also taken from Bier's book. Its application requires special care, as the elastic ring always encircles the same place and hence is liable to produce pressure necrosis of the skin.

Stauungs-Hyperæmie is used by Bier also in all cases of tuberculosis of the lower extremities from the middle of the thigh down, except in cases of tuberculous knee affection with bony adhesion of the patella or subluxation of the tibia. Here resection is performed. For this conservative treatment is indicated and worth the time and trouble only in cases promising a good functional result, *a movable articulation* being the prime object of the method.

For the lower extremities, especially in stout patients, the elastic bandage has to be wider, and is best wound over a thin gauze compress or layer of cotton, as otherwise, owing to the tapering form of the thigh, it would be pulled into narrow bands and cause pain.

In the beginning, some of the patients with tuberculous affection of the lower extremities may have to be kept in a reclining position, but, as improvement advances, they may soon remain up and go about, supported by suitable orthopedic apparatus.

It is of greatest importance to immobilize affected joints as little as possible in order to avoid stiffening. Gentle, active and passive motions, as long as they do not create pain, should be urged. On the other hand, the joints of the lower extremities must be carefully protected against overweight. As long as they are in the inflammatory stage the patient has to wear supporting apparatus and use crutches or canes. He must be cautioned to avoid injury, as traumatism is very apt to again light up the old trouble. Of course, the treatment has to be continued for many months (nine to twelve) before a cure can be expected. Then, however, the patient will have an extremity that can be flexed, at least, to some extent.

On the other hand, a resection of the knee, for instance, will enable us to discharge the patient often after four to six weeks, cured, *but* with a shortened and forever stiff extremity.

In tuberculous disease of the smaller bones and joints of the lower extremity supports are not always required. In one of my patients, a Swedish woman, now aged 32 years, with a simultaneous tuberculosis of the right shoulder and elbow, I did a resection of the shoulder in October (according to Langenbeck's method) and of the elbow (Kocher) in December, 1897. She got a useful arm and has served as waitress ever since, carrying heavy trays without any discomfort. She was presented by me before the New York Surgical Society in February, 1899, and December, 1906.[7]

Lately she called on me again on account of a tuberculosis involving the fourth and fifth tarso-metatarsal joints. The *x*-ray showed the condition most beautifully. She begged me to try everything before resorting to operation, as she could not afford to leave her place and go to a hospital. I consented. To-day, four months after starting the treatment, she walks without pain and promises well to become cured without operation. She has not missed a single day during the entire time. She did not wear a splint, but applied the bandage somewhat more forcibly for one hour in the morning and from one to two hours at night, according to Bier's more recent teaching.

The fact, established by Bier by experience and observation, that by applications of such short duration a cure may be effected is, of course, a tremendous advantage, especially for the working classes. They now can apply the treatment early, before they go to work, and again after their return home, before retiring. Bier has shown that such shorter and intermittent, though somewhat firmer, application of the bandage not only is equally efficacious, but even more so, than the prolonged

5. In case of bone and joint—as well as glandular disease—in which the tuberculous process has broken down and a cold abscess or sinus has developed, the suction cups are almost exclusively used. The time of application is forty-five minutes per day, but not continuous. The cup is applied for five minutes, then removed for three minutes, viz., it is set to work six times in three-fourths of an hour each day. As soon as the originally flabby and pale granulations have become red and firm and the immediate neighborhood of the sinus has become hardened in consequence of the formation of new connective tissue, application is made every second or third day and, finally, only once a week. As to the clinical importance of the appearance of a cold abscess in the course of "Stauungs-Hyperæmie," it is to be emphasized that this is not to be regarded as a turn for the worse, but as the beginning of improvement. If recognized in time and properly treated, a cure is often much more speedily effected in these cases than in those in which the tuberculous affection remains closed during the entire course of treatment.

6. With patient perseverance such tuberculous troubles often heal without operation merely by continued hyperemic treatment. Dr. Schmieden, in his Washington report, referred to some excellent end results obtained without operation, also in cases of advanced bone tuberculosis, with or without involvement of the neighboring joint.

7. See Annals of Surgery, 1899, xxx, 92; 1901, xlv, 150.

use of the same; the edema which always follows the latter does not set in after the shorter periods of treatment, and the tendency to a breaking-down of the tuberculous focus (abscess formation) and appearance of erysipelas due to such edema is done away with.

It is to be regretted that the hip joint, so frequently affected with tuberculous disease, can not benefit from this splendid method. But up to the present time no one has succeeded in producing venous stasis in the hip. Perhaps American ingenuity will find a way out of the dilemma.

As far as hospital attendance of these patients is concerned, it is self-evident that not all patients with tuberculosis of the upper extremities need be admitted. They are essentially dispensary cases, and doctors there preeminently ought to apply and favor the method, especially if the diagnosis is established early. Those with tuberculosis of the lower extremities ought to enter the hospital, at least for a short time, and be discharged, with proper supports, into ambulatory observation and care or, if possible, sent to the country or seashore as soon as sufficient improvement has set in and the correct application of the bandage has been thoroughly grasped by patient or relatives. Of course, *Stauungs-Hyperæmie* is not, and can not be, a panacea, but experience has shown that this conservative treatment is by far the best means at our disposal for tuberculous joints and bones. It makes for success in the simplest way and with a minimum of risk. At the same time it is connected with the least discomfort to the patient; it reduces his pains, instead of adding to them, and gives him the uninterrupted use of the affected parts, to a greater or less extent.

To corroborate some of the foregoing statements by figures, let me refer to Bier's book, in which it is stated[8] that from April, 1903, to August, 1904, 17 consecutive cases of tuberculosis of the wrist were treated at his clinic. Of these, 15, 88 per cent., were cured. Of 11 cases of tuberculosis of the elbow, 8, 72.7 per cent., were cured, and, of 13 cases of tuberculosis of the foot, 8, 61.5 per cent., resulted in a cure. Each of these cases obtained a useful, movable joint, and all remained well at the time of the closing of the statistics, end of August, 1905. The hyperemia treatment in these cases was continued over a period of at least nine months, but in not a single instance was resection resorted to.

There is no question that the method requires a great deal of study and experience by the individual man. Only general rules for its application in the various tuberculous affections can be given; in regard to details, we have to individualize and adapt the method to the given case. As with every other therapeutic agent, we must be careful in determining the correct dosage.

Thus it may be seen, for instance, that improvement, which first had set in with astonishing rapidity, ceases and no further progress is made. In such an event it is time to discontinue the treatment for a while, say from six to eight days.

Most remarkable are the results obtainable in the early stages of tuberculous joint affection. It is evident, therefore, how important it is that the general practitioner, too, should become thoroughly acquainted with the procedure. Much hardship may thus be prevented among his patients.

In our hospitals, I think, it would be best to establish a separate ward for cases with tuberculous affections of the lower extremities, provided their number is sufficiently large to warrant such special provision to be made for them; and in view of the continuous rotation of physicians and nurses it might be well to have two of the younger men of the staff (best voluntary applicants) to superintend the proper administration of the method during their hospital career. In this way only can the best results be obtained, as much time may be wasted and also harm done by the improper application of the treatment.

Of still greater importance is such careful supervision in the treatment of

II. ACUTE SURGICAL INFECTIONS

if we would have our patients benefit by this astonishingly simple and really wonderful procedure, which Bier, having the courage of his conviction, principally tried in this class of cases within the last three to five years, although he began with its evolution as early as 1893, one year after he had first conceived the idea of applying induced hyperemia for tuberculosis.

Just reflect for a moment: We are told by Bier to break with all our former iron-clad rules regarding the treatment of these acute troubles, to consider as wrong the time-honored usage of prescribing rest, ice, elevation, and often long incisions with drainage or gauze tamponade. The very hyperemia, which hitherto we have been combating with all the weapons at our disposal, he now teaches us to look on as being a teleologic factor, a wise arrangement of Nature, in its fight against the invading foe, which has not to be reduced, but to be increased in order to check or cure the infectious process and its many deleterious sequelæ. He certainly has demonstrated beyond the shadow of a doubt that his method is far superior to those formerly in vogue.

Where pus has already formed, incisions must, of course, be made, for "ubi pus, ibi evacua;" but these incisions need be but small, just large enough to permit of giving exit to the pus; drainage, especially in tendon-sheath infections, can and must be dispensed with if we would save the tendon.

Of my personal experience with hyperemia treatment in acute surgical infections, I would here relate the history of but one case:

A young physician, 26 years of age, while wrestling, sustained a compound dislocation of the interphalangeal joint of his right thumb. Doctors are careless. Reduction is done on the spot, and a wet handkerchief wound around the finger. Shortly afterward, without further disinfection, a sterile dressing is applied. Six days later he comes under my care with an acute periostitis of both phalanges and a suppurating joint; the thumb is very much swollen. With our former methods of treatment, I should have rather despaired of saving the finger and joint. As it was, I made a short incision on the opposite side of the joint and one short cut, down to each phalanx, dividing the periosteum and avoiding the tendons. Immediately, on the operating table, the elastic bandage is applied, and worn for 22 hours out of the 24, interrupting one hour at the end of every half day. The pain subsided within 24 hours. The temperature, which before had been 102, was normal on the fifth day and the patient discharged on the twelfth, with the finger much improved. The time of wearing the bandage was gradually reduced. It was applied, in all, for three weeks. In the fifth week a small sequestrum formed. To-day the finger is healed and motion of the interphalangeal joint is unimpaired. No other treatment that I am acquainted with would, I think, have produced an equally satisfactory result.

Further, I have seen most gratifying results of hyperemia by stasis in suppuration of the sheaths of the flexor tendons, best if taken hold of early: short incision of sheath over phalanges, to evacuate the pus, no drain-

8. Fifth edition, 1907, 271-275.

age, elastic bandage around arm; in injury of the hand, in a boy run over by a wagon, with compound fracture of phalanges and metacarpals, opening of tendon sheaths, undermined, soiled wound in the palm of the hand, where, immediately after the necessary surgical work, the bandage was applied with the patient still on the operating table, and the treatment then faithfully continued: especially quick healing and cicatrization, with slight resulting stiffness of fingers; in cases of paronychia: abscess incised, prompt artificial stasis, closed in 48 hours; parulic fistula of upper eyetooth with abscess formation over the respective nasal bone, in a young lady: eleven hours' stasis, twice every day, with one hour intermission, for a short time, with elastic band around neck: cut in face avoided; obstinate tooth fistula of lower jaw, chronic periostitis, intermittent suction with cup for a few weeks: spontaneous closure; suppuration due to fascia necrosis, following silver wire suture in Mayo's operation for umbilical hernia (operation by adjunct attending surgeon at German Hospital), formation of a discharging sinus: suction with cups, definite closure of wound after a few weeks; suppurative postpartum mastitis: small incisions, short drainage tubes, suction, quickly cured with splendid cosmetic result; obstinate furunculosis of face: superficial incision of boils, prolonged intermittent cupping, cured; acute gonorrheal inflammation of wrist and many others.

Lately I have treated a boy of 16 years with fracture of the base of the skull, with artificial hyperemia, elastic band around neck, 22 hours of the 24, starting six hours after the accident, with the intention of thus carrying out a prophylactic treatment against the ever-threatening meningitis in such cases. Convalescence was astonishingly rapid. It will be interesting to watch the result of this preventive procedure in a series of like cases.

It certainly is most interesting and extremely fascinating to read in what a multitude of acute inflammatory conditions hyperemia has already proved useful in the hands of Bier, his associates and followers. I will here only mention, besides those just referred to as having occurred in my own practice, the treacherous infections of fingers, toes, hand and foot and their upward advancing inflammations: acute and recurring osteomyelitis; acute lymphadenitis, parotitis, erysipelas; furthermore, acute mastoiditis, frontal sinus and antral affections, the latter troubles to be treated by means of an elastic band, worn around the neck, with gentle but sufficient constriction to cause stasis without annoyance; furuncles, carbuncles (hyperemia by means of glass cups), etc. It would mean making an abstract of Bier's book were I to enumerate all the diseases that have already and are destined yet to be treated by hyperemia. Bier himself says:

> I believe that the practical use of hyperemia represents the most general and comprehensive mode of treatment in medicine, for I do not know of another remedy that could be successfully employed in so many directions. I have described such a variety of different troubles that were subjected to hyperemia, that many may think I have gone too far. But, on the contrary, I am convinced that this remedy, used by Nature in such a profuse measure to combat all sorts of lesions, is destined to be far more extensively used than has hitherto been attempted.

In connection with and in corroboration of this statement, I should like to refer, in passing, to a recent report by Vorschuetz,[9] from the surgical division of the Buerger Hosppital at Cologne, Germany (Tilmann), in which are described five cases of cerebrospinal meningitis, four of which were cured by artificial hyperemia of the head and repeated lumbar puncture. The fifth, almost cured, a child of 2 years, developed symptoms of acute hydrocephalus at the end of the ninth week, to which it quickly succumbed.

The use of artificial hyperemia in fighting tuberculous, as well as suppurative, cerebrospinal meningitis was first recommended and tried by Bier himself.[10]

I would further call attention to the great importance of hyperemic treatment of pulmonary tuberculosis, especially the incipient form, by means of Kuhn's lung suction mask, consisting of a celluloid cap or hood, covering mouth and nose, fitted with an arrangement that can be regulated so as to render inhalation more or less difficult, while exhalation takes place through large valves or free through the mouth.[11] In 1903 Bier proposed impeded inhalation by means of compressing the patient's nose and unobstructed exhalation through the mouth in order to produce artificial hyperemia of the lungs. Jacobi and Leo had recommended keeping these patients in a pronounced Trendelenburg posture for a number of hours every day.

Most encouraging results in this connection have recently been reported from v. Leyden's clinic, in Berlin, by Kuhn, as also from the sanatorium of Stolzenburg.[12]

Furthermore, I would mention that Bier and his assistants, while using the large glass apparatus for limbering up stiffened joints, incidentally found that these same apparatus, in addition to producing the desired hyperemia, represent a most valuable aid to orthopedic and medicomechanical surgery, much superior to anything so far known.

A point that deserves special emphasis is the great value of the hyperemic treatment in a prophylactic sense. The earlier it is applied, the more effective it will be found in chronic as well as acute infectious diseases. I would here once more refer to the case already mentioned, of fracture of the base of the skull, which was treated by me with the elastic bandage wound around the neck, in order to avoid the advent of meningitis, and was apparently benefited by the same.

The treatment will also prove of great value in this connection especially to physicians sustaining an injury to the second or third phalanx of the finger, during operation or postmortem examination. It will be well for them, after having produced some bleeding from the wound and disinfecting it with acetic acid, and putting on a wet dressing and a finger cot, to wind around the base of the finger one of the commonly used rubber bands, in order to produce hyperemia. The occurrence of many a phlegmon, lymphangitis and lymphadenitis, with suspense of practice for months, may thus often be avoided and many a valuable life be saved. Of course, it will depend on the seat of the injury and the depth of the wound (puncture of tendon sheath) whether it will not be necessary to apply the elastic bandage around the arm at once.

The results of Bier's treatment, and the multitude of new facts in the therapeutics of every branch of medicine, are so extremely interesting that I feel sure that all who take it up at all will be induced to extend its usefulness by carrying it into new, as yet untried, fields. Such continued experimental work will, at the same

9. Münch. med. Wochschr., No. 11, 1907.

10. See Mitthellungen aus der *Grenzgebieten*, vii, 333 and his book, 1907, Fifth Edition, page 382.

11. See Deutsche med. Wochschr., 1906, 37, and Münch. med. Wochschr., 1906, p. 1275.

12. Münch. med. Wochschr., April 16, 1907.

time, tend to demonstrate the limitations of the method, for it must be remembered, as Bier himself has again and again pointed out, the hyperemic treatment is not a panacea for acute surgical infectious diseases, either. It is not, and can not, be beneficial in every case. We are only beginning to grasp its possibilities; undoubtedly much has yet to be learned.

However, what we know as a fact to-day is that Bier has given us a new and most powerful weapon in our warfare against disease. He and those who have worked with him along the path pointed out by him have shown that this weapon, handled either alone or in conjunction with slight surgical intervention, enables us to treat many chronic and acute surgical infectious diseases more conservatively and with less discomfort to the patient, and at the same time with by far superior functional results than any other method so far known in medical and surgical therapeutics.

In conclusion, let me say that I consider it not only the privilege, but the duty of every medical man to study and thoroughly to master the principles of Bier's hyperemic treatment in order to be able to bestow on his patients the great and manifold benefits of this truly wonderful discovery.

DISCUSSION.

DR. W. W. GRANT, Denver, Colo., stated that his experience with the Bier treatment is confined to a year's work and observation in the treatment of acute and chronic infectious diseases, chiefly bone and joint suppurations, and in acute cases, such as puncture wounds of the extremities. He has found it remarkably effective in a number of instances. One, a personal experience, was a puncture infected wound of the finger, obtained in operating on the mouth. There was pain, rapid swelling and redness of the finger. On the next day Dr. Grant began to use this treatment, using absolutely no other measures whatever. He applied a half-inch elastic bandage between the middle joint of the finger and the hand for a half hour at a time, every two or three hours in the twenty-four. There was an almost instantaneous relief from pain, although the swelling continued. The throbbing ceased, and the finger recovered perfectly in a week, without a particle of suppuration. The treatment was continued for only two or three days. Therefore, in Dr. Grant's opinion, the method is a preventive measure of great importance. He has treated other cases of this kind—cases in which suppuration (a local, if not a more general, infection) was expected, in the same way, with equally good results. Two recent cases of chronic infection were considered worthy of record.

One patient, a farmer, aged 54, suffered from an osteomyelitis of the left femur, of twenty-four years' duration. This man had been operated on twice. As a result, he had large scars from the packing of the wounds, with a continuation of the suppuration and necrosis. Dr. Grant used the ordinary methods, removing the dead bone through a long incision and gouging out the pus and débris in the head of the femur, where a large abscess existed. There was in this case complete bony ankylosis of the joint. The patient had not been operated on for several years. The wound was sutured tightly, two rubber drainage tubes were inserted—one in the head of the bone, the other at the upper end of the incision. There was marked relief of pain, the bandage being applied every day for an hour to an hour and a half at a time, tight enough to produce distinct swelling, with capillary congestion and some duskiness of the limb. This bandage was applied daily for two months. The very rapid decrease of the discharge was most marked; the man walked on crutches. At the end of forty days he threw away the crutches and walked with a stick; and in less than ninety days from that date the man threw away his stick; the discharge had practically ceased and he had gained 24 pounds. Dr. Grant said that he had never obtained such a result, in such a case, with the ordinary methods of treatment adopted by good surgeons, either in hospitals or elsewhere.

Another patient, aged 45, had an osteomyelitis of the right femur, of fourteen years' duration. Two operations had been performed on him. Dr. Grant made a long incision on the side of the limb, the joint not being involved. He found considerable necrosis extending completely through the shaft of the bone, therefore chiseled it out, curetted it and put a drainage tube completely through the limb from one side to the other, going through the middle of the shaft, the anterior and posterior surfaces being intact. This man was treated in the same way as the other patient and with the most gratifying result. The wound has healed entirely on the inside. A week ago Dr. Grant removed the long tube and inserted short tubes on each side down to the shaft. Examination showed no denuded bone. The discharge diminished rapidly. There is no more pain, and the man is making most satisfactory progress, though under treatment but five weeks. As the result of his experience, though limited, Dr. Grant commended the measure as a worthy addition to our resources.

DR. V. SCHMIEDEN, Berlin, Germany, stated that on his travels through this country, he was greatly pleased to learn that Bier's hyperemia treatment has been tried in very many places, and everywhere he found not only a thorough and full appreciation of the principles underlying the method, but also a complete understanding of the details of its application. Therefore, there is no reason to doubt that soon there will be reported from elsewhere similarly favorable experiences as those reported by Dr. Meyer.

Dr. Schmieden emphasized that only moderate and conservative application of the treatment can be of value. Too much treatment is as injurious as giving an overdose of a drug. The bandage should be applied by one who thoroughly appreciates the objects of such treatment. Nutrition should not be interfered with in any way; on the contrary, an increased volume of circulating blood is to be directed into the diseased parts in order to manifest its protecting and healing powers. Hyperemia that either causes pain or increases the severity of existing pain is wrong. He advised that after having had an opportunity of observing the proper application of the hyperemia bandages and suction glasses, the physician will do well to begin their use in cases of furuncles, chronic fistulas and fistulous tuberculosis of joints (in the latter cases combining the use of the bandage with that of suction glasses). Then the method may be extended gradually to the treatment of acute suppurations, phlegmons, mastitis, etc. In the beginning it is advisable to supervise the treatment personally. In serious cases and in those attended by fever the patients should be sent to the hospital.

DR. JOHN C. HOLLISTER, Chicago, said that this treatment is of avail, not so much because of the hyperleucocytosis as because of the hyperopsonization, and the necessity of combining passive hyperemia with surgery depends on the fact that the local opsonic power is increased; therefore, the necessity of combining with surgical methods passive hyperemia and vaccine therapy is greater than the necessity of combining singly the two former. Dr. Hollister has found that without exception the serum exuding before the application of the cup over the diseased center was below 1 (i. e., 0.5). After the intermittent application of the cup for from one-half to three-quarters of an hour, according to the directions given by Bier, the opsonic index of the serum exuding from the diseased area is raised toward that of the general circulation. This has been found to be true in cases of tuberculous glands of the neck, of tuberculous fistulas and of staphylococic abscesses.

If, then, the local opsonic index is raised by the application of the cup, is it not absolutely indicated that one raises not only the local but also the general opsonic index? If the opsonic index of the general circulation is below normal, raise it by means of vaccines and then draw by means of the cup into the diseased area this serum with its higher opsonic power. For instance: A small boy with tuberculous glands of the neck had one broken-down gland. His opsonic index, general circulation, was .8; local opsonic index, of serum of neck before cupping was .4. After the application of the Bier cup the local index was .7. Both general and local indices were then raised and maintained above 1 by means of vaccine

therapy and local hyperemia. The boy is steadily improving without any more glands breaking down and most of many affected glands have disappeared. The only purely surgical measure that was done was to make a small puncture to let out the pus and later a curette was used to loosen a final shred of necrotic capsule. A small bluish punctate star is the only remaining evidence of interference. The general condition of the patient has improved very markedly and steadily.

DR. FRANK SMITHIES, Ann Arbor, Mich., said that whenever any new form of treatment is announced there is apt to be over-enthusiasm, and that this may bring about serious consequences. Several years ago he became interested in the published reports of the marvelous results obtained by Bier and others in the treatment of joint affections by passive localized hyperemia. The reports at that time were rather premature and the details concerning the management of the cases were not complete. Since then, however, working along the lines set down by Bier, he has found results in the main to be as so ably set forth by Dr. Meyer. He has been particularly interested in the treatment of joint affections, both acute and chronic. While in the majority of instances the results had been favorable, yet he felt that there are so many factors to be considered in the treatment of any given case by the passive stasis that to secure the best results the therapy must be directed by an experienced person. Herein lies the great danger of recommending the method for use outside institutions, where supervision can not be had over cases. He emphasized the fact that in many cases the method is merely an adjunct to treatment along other lines. All other forms of treatment, such as drainage of pus, the aspiration of fluid, etc., must be carried out. If this is not done the treatment will prove of little value. In certain of the joint affections, such as chronic progressive arthritis deformans or chronic rheumatism, measures have to be instituted to counteract the anemia which is so common. The iron or the arsenic should be pushed at the same time that the stasis is being used. Many of these patients are much emaciated. In that event the use of the protective bandage underneath the rubber constricting bandage must never be neglected. Moreover, the limb must be in proper position. It should not be allowed to hang down; it should be level or slightly elevated. These patients are consequently best treated in bed. The cotton supporting bandage peripheral to the part being treated must always be applied. If this is not done, patients fail to get the benefit of the stasis at the affected part. Dr. Smithies has seen troublesome and long-persisting edemas follow failure to use this supporting bandage. In several cases of arthritis deformans these edemas appeared to become more easily produced as the treatment of the cases progressed. Rest from stasis, with elevation had proved, in his experience, the best method of treating the edemas. He has also noted several instances where severe peripheral neuritis followed prolonged treatment by the Bier method. In two instances marked effusion into joint capsules supervened after several weeks' treatment. One should also inquire carefully into the other conditions of a patient. The age and the general state of nourishment must be considered. Old people and arteriosclerotics are bad subjects for stasis. Very young children must be watched carefully under treatment. Diabetics or patients with essential anemias should not be treated, especially for chronic affections. Patients with chronic heart disease are best let alone.

Concerning the length of time that the constricting bandages should be left in place, Dr. Smithies stated that his experience is in line with that of the majority of users of Bier's method. In general, chronic cases do well with rather strong constriction maintained for from one-half to two hours twice daily. The patients seem to do better if the length of time of application is increased gradually during the first fortnight. He has always had these patients massaged with warm olive oil after removal of the constricting bandages. In acute cases mild constriction maintained for from five to twenty-four or more hours, has given good results in his hands. He is very careful about recommending this method of treatment in cases with abundance of free pus, on account of the danger of a general septicemia following the removal of the constriction. In all cases the condition of the patient must guide one in the application of the stasis. At the first appearance of bad effects, such as edema, peripheral neuritis or effusions into capsules, the treatment must be stopped until the tissues regain their vascular tone. As to the causes of the wonderful results sometimes following the use of hyperemia, he thinks that too little experimental work has yet been done. The work of Dr. Hollister along the lines of increase in local opsonic power of the blood serum, he declared, appears very promising. This was suggested by several observers some two years ago, but he has seen no definite tabulation of results prior to that of Dr. Hollister's, although he has noted the increased opsonic power in one case in his own experience.

DR. JOHN B. ROBERTS, Philadelphia, suggested that inasmuch as the irritation of the skin is due to the difficulty of getting ventilation on account of the rubber bandage, why not use elastic webbing? A pair of suspenders could be used.

DR. WILLY MEYER, New York, said that any one who has practiced the hyperemic treatment for some time will have made so many interesting observations that he could talk about them for hours and hours. There is much that is new and fascinating. Dr. Hollister, he said, spoke of the opsonic power being increased. It certainly is most difficult to go into the theory of the hyperemic treatment, but Bier himself emphasized that it is better to say that the blood is doing it, and not go too much into the theory of the thing. The pathologists have brought forward so much that it is most difficult to say what is right and what is wrong. At present, we must say that the effect of the treatment is dependent on the greater amount of blood. The physiologic effect is so complicated that it will be a long time before the truth about it will be known. Dr. Meyer said that he was especially interested in the remarks of Dr. Grant, because he referred to the prophylactic use of the hyperemia treatment. It is well known what may happen to the surgeon in consequence of an injury sustained during an operation on a septic patient; the pathologists also often suffer in consequence of some slight abrasion sustained during the conduct of a postmortem examination. Dr. Meyer knows of three prominent surgeons of New York who were seriously sick for months with pronounced lymphangitis and lymphadenitis in the axilla. In these cases, particularly, the preventive treatment by means of Bier's method will be very useful. Dr. Meyer always carries in his pocket a number of finger cots and small rubber bands. As soon as an injury to the region of the second or third phalanx of the finger has occurred during an operation, he squeezes out the finger and applies acetic acid. But that is not all one can do. It is of importance to dress the small wound with some moist gauze and to slip over the injured finger a finger cot and over the cot one or two small rubber bands, placing them at the base of the first phalanx so as to produce a slight hyperemia. The pain soon ceases and small wounds heal rapidly in a few days, without producing any lymphangitis. In the case of fracture of the skull, Dr. Meyer debated before starting the treatment whether it was advisable to use a bandage around the neck and produce a hyperemia within the cranial cavity. He could not prove absolutely that the boy had a fracture of the base of the skull, but he is convinced that every one would have diagnosed his case as such. He fell down about twenty feet, was picked up unconscious, vomited blood three times and had great tenderness on pressing the region of the supposed fracture.

Referring to the remarks made by Dr. Smithies about over-enthusiasm, Dr. Meyer said that for fifteen years we have heard again and again one of the most capable and impartial observers write on his own discovery, and many others have seen what an amount of good this treatment is able to do. If there has been any enthusiasm shown, it must have been stimulated by the excellent results observed. But it must be borne in mind that medical men are only commencing to realize what is in hyperemia, and what it can do when made use of rightly. There are three methods: the use of the bandage, the cupping glass and hot air, and one must learn to ascertain the proper indication for the use of the three.

THE PRINCIPLES OF VACCINE THERAPY.

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(*Concluded from page 487.*)

CONDITIONS WHICH OBTAIN IN THE FOCI OF BACTERIAL INFECTION.

We may conveniently begin with the study of the conditions which obtain in foci of bacterial infection. I have already pointed out that the foci in which bacteria cultivate themselves are in every case "foci of lowered bacteriotropic pressure," and that the deficit of antibacterial substances in such foci can be accounted for by the facts that bacteriotropic substances are absorbed whenever blood fluids come in contact with bacteria, and that in the case of foci which are cut off from the blood stream the conveyance of bacteriotropic substances to the focus of infection by the lymph stream can only rarely keep pace with the absorption. This premised with regard to the conditions which are common to all bacterial foci, I may conveniently direct attention to special conditions which obtain in infections of serous membranes where serous effusion has taken place, in abscesses, in sinuses, and in association with brawny swelling of the subcutaneous tissues.

(a) *Conditions Which Obtain When Bacteria Are Growing in or in Contact with Serous Effusions.*—These are well shown in tuberculous peritonitis. Here, as Douglas and I have already shown, the ascitic fluid has in every case a much lower opsonic index than the circulating blood. It follows that the bacteria which are cultivating themselves in, or in contact with, such ascitic fluid are not exposed to the full bacteriotropic pressure of the circulating blood. We have here an explanation of the success which has attended tapping and in particular laparotomy in tuberculous peritonitis. That success is satisfactorily accounted for by the replacement of a stagnant lymph which has forfeited much of its antibacterial virtue by a fluid of higher efficacy freshly derived from the circulating blood. Manifestly we should be neglecting a very important element in the treatment if, while aiming at the destruction of bacteria in serous membrane by processes of immunization, we were to fail to take into account the fact that the bacteria which are the object of our attack are cultivating themselves under a lowered bacteriotropic pressure.

(b) *Conditions Which Obtain in Abscesses.*—In abscesses the conditions are more complicated. Here must be taken into account not only the absorption of bacteriotropic substances by bacteria, but also another factor which does not come into consideration in the case of ordinary serous effusions. This factor is the liberation of a tryptic ferment from the leucocytes. Such liberation occurs, as Opie has shown, whenever these formed elements disintegrate in pus. Let us note that we have here a factor which may well explain the paralysis of all phagocytic effort which sooner or later overtakes the leucocytes in every focus of suppuration, and which continues to affect them even when they have been brought in contact with bacteria in the presence of normal serum. It thus appears that as soon as bacteria have grown, and leucocytes have disintegrated in an abscess in numbers sufficient to abolish the opsonic and antitryptic power of the surrounding fluid, not only the normal bacteriotropic defense, but also the leucocyte defense is thrown out of gear. I have neither the time nor the data to discuss certain important but incidental issues which suggest themselves in this connection, in particular the issue as to whether the liberation of tryptic ferment in the abscess—which Opie has brought into association with the destructive and burrowing action of pus—may not also account for the frequent sterilization of the contents of an abscess. It is, however, incumbent on me to point out that when aiming at the destruction of the bacteria in an old suppurating focus by the agency of opsonins and leucocytes, and at the same time at the safeguarding of the tissues from the digestive power of the pus, it would be futile to attempt this task without making provision for the replacement of the tryptic and non-opsonic pus fluid by an antitryptic and opsonic fluid freshly derived from the circulating blood.

(c) *Conditions Which Obtain in Sinuses.*—The conditions with which we have to deal in a sinus when that sinus is freely discharging pus are, I take it, essentially similar to those which prevail in an abscess which is discharging without emptying itself. In other words, there is pus fluid which possesses a low opsonic power, and which exerts on the tissues a digestive effect—a digestive effect which makes itself manifest to the eye in the case of a discharging sinus in the sodden and unhealthy appearance of the skin in the neighborhood. In the case of a sinus without discharge we have to deal with conditions which might be compared to those which would obtain in a well if the water which originally flowed into it had deposited an insoluble element in such a manner as to choke up all the conduits of supply. We can easily conceive how, on the walls and floor of such a well, forms of life might maintain themselves which would be quite incompetent to penetrate into the surrounding soil, or to hold their own in the face of a copious inflow and overflow of water. A dry sinus is, if I understand the situation aright, analogous to just such a choked well, the obstacles to the inflow of lymph being, on the one hand, the density of the granulation tissue, and, on the other hand, the lining membrane of fibrin which clothes the walls of the sinus. If I am right in thinking that these are the conditions under which bacteria maintain themselves in a sinus for the dislodgment of the bacteria something more is needed than a mere increase of the bacteriotropic power of the blood and circulating lymph.

(d) *Conditions Which Obtain in "Brawny Swelling."*—Next in order we have to consider the condition in which there is a focus of bacterial growth in tissues which are affected with "brawny swelling." I consider that in brawny swelling we have conditions which are, in the respect that the bacterial growth is cut off from the blood and lymph stream, analogous to those which have just been under consideration in connection with sinuses. It is in the nature of a minor difference only that in brawny swelling the bacterial growth is isolated from the blood and lymph stream by the clotting of the lymph in the lymphatics, while in the case of a dry sinus the isolation of the bacteria is brought about by the clotting of the lymph on the surface of granulation tissue.

THERAPEUTIC PRINCIPLES WHICH EMERGE FROM CONSIDERATION OF CONDITIONS IN A BACTERIAL FOCUS.

A strict regard for the logical development of my subject matter would perhaps dictate that at this point I should embark on the study of the phenomena of autoinoculation, reverting afterward to the consideration of the therapeutic measures which may be employed for dealing with the difficulties which are created (a) by

the absorption of bacteriotropic substances in the bacterial focus, (b) by the liberation of tryptic ferment that takes place there when leucocytes are broken down, and (c) by the blocking of the lymph channels. It will perhaps be more convenient, however, if I discuss the therapeutic measures by which we may deal with these difficulties while the situation which we have in each case to confront stands out clearly before your minds. The general principles which ought to underlie all our therapeutic measures are the following:

1. We must provide for the conveyance of bacteriotropic substances into the focus of infection.

2. In case an accumulation of stagnant fluid in the focus of infection effectually prevents the entrance of bacteriotropic substances, as a preliminary measure we must draw off the fluid which occupies that focus.

3. In case there are other obstacles to the free streaming of lymph through the focus of infection we must remove those obstacles.

(a) *Conveyance of Bacteriotropic Substances Into the Focus of Infection.*—The douching of the focus of infection by a stream of lymph drawn fresh from the blood vessels, when the tissues are uninjured and the lymphatic channels are open, can be effected by determining by the agency of heat or any other rubefacient a larger blood supply to the region affected. It can also—as in Bier's method—be effected by backing up the blood in the veins in such a manner as to increase the hydraulic pressure in the capillaries.

(b) *Removal of Stagnant Fluid from the Focus of Infection When This Prevents the Lymph Finding Proper Access to the Infecting Bacteria.*—In case the lymph can make its way effectively through the focus of infection, permeating every part of it, access of the bacteriotropic substances to the infecting bacteria will manifestly be provided for by the activation of the lymph stream quite apart from any operative interference. In such a case the stagnant fluid which occupies the bacterial focus will be driven on into the general circulation by the *vis a tergo* of the activated lymph—whether for good or for ill we must afterward consider. When this method of dispersion is inapplicable, or when for any reason it is contraindicated, the evacuation of the stagnant fluid by operative measures will obviously be desirable. In case there is in an abscess a tryptic fluid which is actively eating its way into the surrounding tissues,[7] such evacuation will not only be desirable, but imperative.

When we elect to employ the method of evacuation as distinguished from the method of dispersion, our choice will lie between simple incision, incision followed by dry cupping—as advocated by Klapp—and evacuation by aspiration. This last method has, I submit, an advantage over all others, as it does away with all scarring and minimizes the risk of the entrance of bacteria from without and the risk of autoinfection of the edges of the wound. It also secures more effectively than any method of incision and drainage what is in the case of an abscess the obvious desideratum, to wit, the filling up of the evacuated cavity with an antitryptic and opsonic lymph which will both arrest further digestive destruction and inhibit bacterial infection.

7. It is perhaps worth noting that the fact that an abscess gives fluctuation does not by any means furnish sufficient warrant for concluding that it contains a tryptic fluid and that operative measures must be resorted to. Again even when the contents of an abscess by the disintegration of leucocytes have already acquired tryptic powers, it may still be practicable to abolish that tryptic power and to effect resolution by leading into that abscess cavity a sufficient quantity of antitryptic lymph.

(c) *Removal of Obstacles to the Free Streaming of Lymph Through a Focus of Infection.*—We have seen above that a deficient outflow of lymph and the formation of a lining of fibrin on its walls are favorable to the survival of microbes in a sinus. I am accustomed to combat these conditions by introducing into every dry sinus a solution of 0.5 per cent. citrate of soda and 10 per cent. sugar (or in lieu of this a solution of 0.5 citrate of soda and 5 per cent. sodium chlorid), supplementing this treatment when necessity arises by Klapp's system of dry cupping. It will be understood that the citrate of soda prevents coagulation and scabbing by decalcifying the lymph, and that the sugar or salt, acting by osmosis, causes fluid to transude from the blood vessels. Under the influence of these applications, a clear lymph begins to well out from the previously choked sinuses and the local conditions rapidly improve. The situation in brawny swelling of the subcutaneous tissues being, in the respect that the lymph stream is arrested, essentially similar to those which have just been considered, it must be treated on the same principle. In this connection I may perhaps make brief reference to a case of Ludwig's angina which recently came under my observation.

History.—The patient, a middle-aged man, had in the first instance developed what was taken for an indolent furuncle in the parotid region. When after considerable delay this was incised no trace of pus was met and the tissues were found to be everywhere dry and infiltrated. They remained in this condition and the wound showed absolutely no disposition to heal. Two weeks later, the patient, who till then had been taking out-door exercise, was suddenly taken seriously ill, and the brawny swelling which up to that time had been limited to a patch on the left cheek, spread rapidly round under the jaw from one ear to another.

Surgical Treatment.—A surgeon now carried a series of vertical incisions deep down into the indurated tissues. Twenty-four hours afterward the patient had lapsed into a condition of low delirium and the local conditions showed no signs of improvement. When I saw him I could not, even at the bottom of the gaping incisions, find sufficient moisture to fill the loop of a platinum needle. Film preparations obtained by pressing cover glasses against the sides of the wound showed abundant streptococci and only here and there a leucocyte. Blood drawn from a vein at the elbow with the intention of making a culture clotted *instantaneously* in the syringe.

Other Treatment.—It was immediately clear that what was most urgently required in this case was not that further means of antibacterial defense should be furnished to the patient, but that such means of antibacterial defense as were already at his disposal should be brought into application on the streptococci in the focus of infection. With a blood so viscid and coagulable as was that of this patient it was inconceivable that any lymph should transude into his tissue. It was conceivable also that any transuded lymph should not clot in his lymphatics. Influenced by these considerations large doses of citric acid were prescribed, 60 grain doses being administered every three hours. Six hours after the first dose had been taken, lymph began to ooze into the wounds, and by next morning all the wounds had begun to bleed. The administration of citric acid was then suspended. A culture of infecting microbes having now been obtained the opsonic index of the patient's blood was determined. That opsonic index working out at 1.8, and very distinct amelioration having taken place in the patient's symptoms, inoculation treatment was postponed. There was not afterward any occasion for immunizing intervention, the patient making continuous and rapid progress to complete recovery.

There is, I think, a lesson in this case which we shall do well to take to heart in conditions of brawny swelling.

AUTOINOCULATIONS.

Up to the point at which we have now arrived the reaction of immunization has been considered exclusively in relation to the incorporation of bacterial vaccines. A moment's consideration will make clear, however, that where, in association with a bacterial invasion of the organism, bacteria or bacterial products pass into the general lymph and blood stream intoxication effects and immunizing responses similar to those which follow on the inoculation of bacterial vaccines must inevitably supervene. You will by this time have realized that it must be by the agency of such autoinoculations that Nature achieves curative effects in bacterial infections. You will have realized also that the man who proposes to combat infections by methods of immunization must needs be familiar with the conditions under which autoinoculations occur and with their effects on the organism. In the absence of such familiarity the physician will inevitably lose his way when he sets out to supply the place of autoinoculations by artificial immunization, or, as the case may be, to collaborate with Nature—by supplementing her autoinoculations by his inoculations—or to place a check on Nature's autoinoculations when these are overtasking his patient's powers of immunizing response.

(a) *Types of Infection and Conditions in Which Autoinoculations Occur.*—We may conveniently begin by enquiring in what types of bacterial infection and under what conditions autoinoculations take place. You will, of course, immediately discern the position of affairs in the contrasted types of generalized and strictly localized infections which were considered in connection with the expectant method of treatment. In the former class of infections autoinoculations are occurring in continuous series; in the latter they are conspicuous by their absence. In the type of localized infections which are associated with intermittent constitutional disturbance we have a class of infections which is intermediary between the other two, in the respect that there is here intermittent autoinoculations. The autoinoculations which have been in question up to this point are, let it be noted, what we may speak of as spontaneous autoinoculations. in addition to these we have also a class of artificially induced autoinoculations.

Taking our departure from an observation by my collaborator, Dr. J. Freeman, which had reference to an autoinoculation induced by the massage of a gonococcal knee at St. Mary's Hospital during the last twelve months, we have made a systematic study of the conditions under which autoinoculations can be produced in persons affected with localized bacterial infections. We have been able to show that autoinoculations follow on all active and passive movements which affect a focus of infection and on all vascular changes which activate the lymph stream in such a focus. Evidence has been obtained of the production of autoinoculations by massage and operations affecting tuberculous glands; by passive extension, massage, and surgical operations affecting tuberculous and gonococcal joints, and by scrapings in tubercular caries and staphylococcal osteomyelitis.

Evidence has been obtained of the production of artificial autoinoculations in phthisis both by the agency of respiratory efforts and in an ordinary routine examination of a patient by percussion and auscultation. We have also in a laryngeal affection seen an autoinoculation supervene on reading aloud. Again we have obtained evidence that autoinoculation may follow on walking exercise in the case of patients affected with tuberculous disease of the bones or joints of the lower extremity or with severe tuberculous epididymitis. We have also obtained evidence that in the case of patients with spinal caries, autoinoculations are induced by a change from the recumbent to the sitting posture and from the sitting to the erect posture. Lastly, we have evidence that autoinoculations are produced both by active and passive hyperemia (hot fomentations and Bier's bandages) to limbs affected with tubercle.

ASSISTANCE WHICH CAN BE OBTAINED FROM ARTIFICIAL AUTOINOCULATIONS IN THE DIAGNOSIS OF OBSCURE CASES OF LOCALIZED INFECTIONS.

Let me digress here from the consideration of the therapeutic problem to consider the assistance which may be derived from the induction of artificial autoinoculation when a problem of diagnosis confronts us. Rightly understood, all methods of bacteriologic diagnosis in which we arrive at the nature of the infection by a process of induction from a determination of the bacteriotropic constituents of the blood are methods which have as their aim the detection of the changes which are produced in the blood by the agency of autoinoculations. The following three examples will suffice to make this clear. The agglutination test in typhoid fever, whose authorship was claimed by Widal on the plea that the increased agglutinating content of the serum was something other than the result of an immunizing response evoked by an autoinoculation, is now by common consent recognized to be a test which depends—as Gruber and his collaborators, Durham and Grunbaum, maintained from the very first—on the detection of products of immunity produced in response to an autoinoculation. "The thermostabile opsonin test," whose diagnostic value was first demonstrated by Douglas and myself, furnishes, in like manner, evidence of an immunizing response to a foregoing autoinoculation or, as the case may be, to an inoculation of the corresponding bacterial vaccine. Exactly the same thing holds true of the "absorption of complement test" recently so extensively exploited by Wassermann.

It will be clear that in all these cases diagnosis has, perforce, to wait on the immunizing response to spontaneous autoinoculation. And such spontaneous autoinoculation may be indefinitely deferred, as we have seen in localized infections. It, therefore, marks a definite step in advance when we come to realize that, in case the focus of infection is accessible, we can supply the place of the spontaneous autoinoculation which makes default by the induction of an artificial autoinoculation. Up to the present, from the induction of autoinoculation by the agency of massage or active muscular movement and the associated measurement of the opsonic index before and after such active and passive movements, we have obtained diagnostic results which in every case have been borne out by the subsequent history. I would note here—for it is germane to the subject matter under discussion—that we have had recourse to autoinoculations associated with measurements of the opsonic index, not alone for the preliminary diagnosis of a bacterial infection, but also for the purpose of obtaining information with regard to the progress of the patient. When an artificial inoculation can no longer be induced in a focus which previously could be influenced, we are entitled to conclude that the focus is extinct. When an autoinoculation can still be induced, we may be assured that the focus is still aglow.

DISCUSSION OF THE COMPARATIVE MERITS OF TREATMENT BY INDUCED AUTOINOCULATIONS AND TREATMENT BY THE INOCULATION OF BACTERIAL VACCINES.

It has, I take it, come home to us all that we have in spontaneous autoinoculation, in artificially induced autoinoculation and in the inoculation of bacterial vaccines, the three great agencies by which immunizing responses are evoked in the organism.

Comparing first the immunizing effects which are achieved by autoinoculations, taken generally, with those which are achieved by the inoculation of bacterial vaccines, it may, I think, be stated with confidence that the former method of immunization is far more expensive in the respect that the patient obtains a much smaller yield of protective substances for an equivalent of intoxication. A number of other considerations come into account when we have to elect between treatment by artificial autoinoculations and treatment by the inoculations of bacterial vaccines.

First in order comes the question of an eventual risk of disseminating living bacteria in the organism. It will be appreciated that the employment of autoinoculations—since here, of course, living cultures are exploited—can never be entirely dissociated from this risk. Such risk falls entirely out of account when we operate with sterilized bacterial vaccines. Next in order of importance comes the question of dosage. It will be plain that in all autoinoculations we operate not only with the living cultures, but with unmeasured doses. When we have to deal with a very considerable focus of infection, or, failing this, when, in a smaller focus, the irrigation of the focus with lymph is searching and unduly prolonged, an excessive dose of the bacterial products will be washed into the general blood and lymph stream.

When, on the other hand, we have to deal with a small focus of infection, or when, in the case of a larger focus, irrigation with lymph is continued for too short a time, too small a vaccinating dose will come into application. Again, when by reason of a gradual restriction of bacterial growth effected by immunization, or when by reason of a repeated draining off of bacterial products under the influence of Bier's treatment or of massage, diminishing quantities of bacterial products are available in the focus of infection, there will come into application diminishing doses of vaccinating elements, while there might be required for the maintenance of adequate immunization reactions undiminished or, as the case may be, increasing doses of these elements.

Lastly, we have to keep in view, on the one hand, the fact that methods of autoimmunization are applicable only in the case of foci which are superficially situated or foci which are situated in the extremities; and, on the other hand, the fact that the demands which are made on the patient's time and the work which is thrown on the controlling physician, in the case in which autoinoculation methods are employed, are much more serious than in the case in which inoculations with measured doses of bacterial vaccines come into application.

Let it be noted, in conclusion, that the issue as between treatment by autoinoculation and treatment by the inoculation of bacterial vaccines which has just engaged our attention reveals itself, on consideration, to be to some extent an academic issue. Whether we set out to activate the lymph stream on purely empirical principles, as Bier does with his bandaging and the ordinary surgeon with his hot fomentations and his massage, or whether, as "immunizators," we employ these methods with the sole intent of conveying the bacteriotropic substances from the blood into the focus of infection, there will in each case be achieved, in addition to the local effect which was in view, an unsought artificial autoinoculation. Unintended beneficial clinical effects are not infrequently obtained in connection with Bier's treatment in the form of an amelioration in bacterial foci remote from the seat of application of the bandage. In massage of gonorrheal joints I have also seen such unintended effects both in the form of amelioration and in the form of aggravation of the condition of untreated joints.

It equally holds true that, whether we set to work on purely empirical principles to evacuate an abscess, to tap a serous effusion, or to apply massage, or whether, as "immunizators," we apply a Bier's bandage, or massage, or any similar device, thinking only of its autoinoculating effect, there will in each case be achieved, in addition to the particular effect which was aimed at, also an influx of antibacterial substances into the focus of infection.

MAY INOCULATIONS OF BACTERIAL VACCINES BE UNDERTAKEN IN THOSE TYPES OF BACTERIAL INFECTIONS WHICH ARE ASSOCIATED WITH SPONTANEOUS AUTOINOCULATIONS?

When the question as to the possibility of inoculating bacterial vaccines with safety and advantage to the patient in septicemic infections, and in general in those types of infection which are associated with spontaneous autoinoculations, comes up for discussion we are confronted with the *a priori* objection that, inasmuch as the vaccinating bacterial products are already circulating in the blood, producing an intoxication, it would be plainly irrational to expect from the incorporation of further bacterial elements anything more than aggravation of that intoxication.

To this argument two different rejoinders can be made. On the one hand the objector may be met with the favorable results of actual experiments in which bacterial vaccines have been inoculated in septicemic infections. On the other hand, an endeavor may be made to bring it home to the objector that resource to the inoculation of bacterial vaccines in septicemic conditions is not the irrational proceeding which it might at first sight appear.

I may conveniently here address myself to this last task, leaving for future consideration the results which have been actually obtained by inoculation in septicemic disease. Let me hark back to what was said in an earlier part of this lecture on the subject of the probable place of origin of the antibacterial substances. If I am right in supposing that the bacteriotropic substances are manufactured locally in the tissues, it will be obvious that the conditions for successful immunization will be less favorable when the vaccinating elements are thrown into the circulating blood than when they are inoculated directly into the tissues. In the latter case they will come into application on the tissues in a concentrated form, while in case they are introduced into the circulating blood they will come into application on the tissues only after they have been diluted by the whole volume of that blood. It is accordingly not irrational to assume that there would be a possibility of a septicemic patient deriving in this respect advantage from the inoculation of bacterial vaccines. Let us suppose it granted that from the point of view of his immuniza-

tion such a patient might derive advantage. There would still remain the objection that the inoculation of bacterial vaccines might aggravate his intoxication. The rejoinder to this objection is, I think, suggested by the consideration that local toxic effects on the tissues, such as we know are produced by the subcutaneous inoculation of vaccines, and a local elaboration of bacteriotropic substances, such as we infer to follow on inoculation, would be inexplicable apart from a holding back of the toxic substances in the tissues. Conformably with this, a much smaller intoxication effect would result from the incorporation of an aliquot quantitv of vaccine into the tissues than from the inoculation of that same amount of vaccine directly into the blood stream.

I would put it to you, in view of these considerations, that the question as to whether vaccine therapy can or can not be successfully employed in septicemic diseases is a question which ought to be approached without bias and one which can be decided only by experiment.

RESULTS WHICH HAVE BEEN ACHIEVED BY VACCINE THERAPY.

With this discussion I have at last brought to a close my exposition of the main principles of vaccine therapy, so far as these are at present clear to me. I will say, in conclusion, one or two words on the subject of the results which have been achieved by the application of this method in actual practice.

The evidential methods which an author can employ to establish the efficacy of a new treatment are, as consideration will show, the following:

(a) He can publish examples of refractory cases successfully treated.

(b) He can publish, when such become available, examples of desperate cases successfully treated.

(c) When he has treated a sufficiently large number of cases, he can publish the complete series, giving the particulars of each case and the results of the treatment.

(d) If he should be fortunate enough to enlist the interest of other workers, he can commit it to these to furnish definite proof of the efficacy of his method.

Let me try to bring out the strength and weakness of each of these methods.

The value of a number of refractory cases successfully treated lies in the fact that when success has been achieved in connection with a number of such cases the idea that the results can be due to spontaneous cure may be dismissed.

There always attaches to this class of evidence, however, a possibility of doubt, inasmuch as, even when the author is citing a consecutive series of successful cases, the reader will find a difficulty in believing that these were typical cases. He may incline to the view that all the cases cited may have been exceptionally fortunate ones in which Nature was good enough in each case to effect a spontaneous cure.

When the author has cited desperate cases successfully treated, somewhat similar criticisms apply. It will be manifest that if the cases cited are in point of fact, as he deems them to have been, cases in which a cure could not possibly have been effected by the unassisted efforts of Nature, the successful outcome of these cases furnishes complete proof of the efficacy of the treatment. It must always be borne in mind, however, that, in the absence of the evidence of his own eyes to the desperate condition of the patients, the reader may find it easier to believe that the author was mistaken in regarding his case as desperate than to believe that the treatment can have been effectual in desperate cases. Quite other are the criticisms which would apply to a statistical record of the result of treatment in a consecutive series of cases. I thing that it is not open to doubt that, apart from any incidental value which it might derive from the inclusion of refractory or desperate cases, such a register of cases would acquire value only if it were placed over against a register of similar control cases.

Now a series of untreated cases such as would serve the purpose of controls can not be obtained in practical life. For such a series of untreated controls there would have to be substituted, therefore, as the only possible alternative, a series of cases treated by another method and another practitioner. Now if this were done the scientific issue would immediately be confused, not only by doubts as to the comparability of the two series of cases, but also by the question as to whether the alternative method was hurtful or beneficial, and, above all, by the question of personal competition. If you will consider what confusion would be introduced in this way in the issue which we are here concerned to resolve, you will, I think, understand the motives which influence me when I say that I do not purpose, either here or elsewhere, to supplement by any attempted statistical proof that presumptive proof of the efficacy of vaccine therapy which I claim to have furnished by the citation of numerous refractory and desperate cases successfully treated by the inoculation of bacterial vaccines.

If you have completely entered into my thought you will appreciate that if in this lecture I have restricted myself in the main to an exposition of the principles of vaccine therapy, leaving over so short a time to the discussion of the practical results which have been achieved, this has not been without set design. You will understand that it has been done because I felt that, if I could enlist interest in the method of vaccine therapy, if I could show on what principles it proceeds, and if I could induce here and there a scientific worker to embark on the task of mastering and carrying out patiently the somewhat delicate technic which, in my opinion, is essential to the proper exploitation of vaccine therapy, I might perhaps be taking the shortest way to procure a verdict on the practical efficacy of vaccine therapy which should be free from the fallacies which attach to any author's account.

TYPES OF BACTERIAL INFECTION PRESENTING SIMPLEST PROBLEMS.

In conclusion, let me attempt to summarize briefly my personal experience of the practical results of vaccine therapy. You will, of course, appreciate that no one formula could possibly apply to all the various forms of infection which are encountered.

It will be well to commence with the type of bacterial infection which presents the simplest therapeutic problem.

(a) *Penetration of Single Species of Micro-organism into Body.*—In this type of infection, a single species of micro-organism has penetrated into the interior of the body and has established itself below the surface in one or more foci without causing any considerable destruction of tissue or constitutional disturbance.

Typical examples of this type are found in cases in which tubercle bacilli have effected a lodgment in lymphatic glands and in which staphylococci have penetrated into the subcutaneous tissue, causing as yet only

suppurative (furuncular) as distinguished from necrotic (carbuncular) changes. In this type of infection, all but uniformly successful results have been achieved in my experience by vaccine therapy. In furunculosis, those results are achieved within a period of a few days. In tuberculous infection of the lymphatic glands the period required has varied, according to the extent of the infection and the patient's power of immunizing response, between five weeks and eighteen months. On the average it has been about six months.

What applies to tuberculous infection of the lymphatic glands applies in a general way also to tuberculous infection of the testicle and to simple tuberculous infection of the kidney and urinary passages. It applies also—but on this question I speak with a reserve imposed on me by very restricted experience—to early cases of tubercle of the lungs.

(b) *Ulcerative Type of Infection.*—In my experience this type of infection—a type which is met in connection with the breaking down of nodules in the deeper tissues or, as the case may be, with the penetration of superficial infections into those tissues—does not differ with respect to its tractability to vaccine therapy from the type of infection last considered, except when secondary infections have supervened. If anything—when secondary infections have either been avoided or successfully combated—an open ulcer is more tractable to vaccine therapy than a localized infection in the deeper tissues. It will be clear that every ulcer which starts from the surface ultimately makes its way down to a lymph-bearing stratum, and that as soon as it has done this the lymph stream which has been tapped will well up through the floor of the ulcer, coming in contact, as it does so, with the infecting micro-organisms.

(c) *Infections of the Skin.*—Infections of the skin fall naturally into two categories. When the infected skin is comparatively dry and scaly and non-vascular we are dealing with a form of infection which, in my experience, is extremely intractable to vaccine therapy. A typical example of such an intractable type of skin infection is furnished by the superficial scaly form of lupus which, from the point of view of its superficial resemblance to psoriasis, has been appositely denoted *lupus psoriasis.* Where the skin is vascular or, as the case may be, where we have a pustular form of infection as, for instance, in the case of pustular acne and pustular staphylococcal sycosis, we have, on the contrary, a form of type of infection which is very tractable to vaccine therapy.

(d) *Infections of Mucous Membranes and of the Glands and Ducts Connected Therewith.*—Infections of mucous membranes, in my experience, are readily influenced by vaccine therapy. I have obtained or had experience of successful results in many different infections of the mucous lining of the ear, antrum, nose, nasal sinuses, dental alveoli and salivary glands, also in bacillus coli infections of the intestinal mucous membrane and gall bladder, and in many different infections of the uterus, urinary bladder and urethra.

I would direct special attention to two points in these infections. The first relates to the question of mixed infection. It is plain that when we are dealing with bacterial infections of mucous membranes, which normally harbor on their surfaces numerous species of bacteria, the expulsion restriction of numbers of the peccant micro-organism—a restriction which can readily be achieved by vaccine therapy—may often be followed, when the mucous membrane has suffered in such a way as to lose its power of resistance, by a multiplication of some other competing form of micro-organism. My second point relates to the case of bladder infections. Here there is generally a bacteriuria in addition to the infection of the mucous membrane. Now it does not by any means follow that the extinction of the infection of the mucous membrane—which, judging from the abatement of the cystitis, can often be readily obtained by vaccine therapy—will be followed by a cessation of the bacteriuria. This last-mentioned result, however, has, be it noted, already been obtained by the agency of vaccine therapy in five of the cases which I have treated.

(f) *Infections of Sinuses.*—In my experience, successful results are obtained when the inoculation of bacterial vaccines is combined with the course of treatment prescribed on page 568 (c).

(g) *Mixed Infections.*—Before discussing the results which have been obtained by vaccine therapy in mixed infections an introductory word may be appropriate. While the suggestion that mixed infections must be expected, in the common suppurative processes which occur in connection with surfaces which harbor microbes, may well be universally acceptable as not breaking in on any accepted ideas, the suggestion that mixed infection must perforce be considered in every case of phthisis, lupus, tubercular caries, tubercular cystitis and tubercular ulceration, in the very nature of things, will be unacceptable to many clinicians. Such a suggestion will be felt to throw doubt not only on the clearness of vision of those who have sought for antituberculous remedies in these diseases, but also on the critical acumen of those who, without taking into account the fallacies which are incidental to clinical methods have confidently undertaken to pass final judgment on antituberculous remedies by the observation of their clinical effects in cases in which, in addition to the tubercle bacillus, other pathogenetic microbes may have been at work.

Be it acceptable or unacceptable, there is no escape from the fact that practically every case of suppurating lupus is complicated by staphylococcus infection, and every aggravated case of lupus with a streptococcus infection. What holds true of lupus holds true *mutatis mutandis* of every tuberculous affection to which microbes can find access.

RESULTS OBTAINED BY VACCINE THERAPY.

Having appreciated the magnitude and the far-reaching nature of the issues involved in the treatment of mixed infections, we may come to the question of the results achieved in these cases by vaccine therapy. We have two cases to consider.

(a) *Case in which Vaccine Therapy is Directed to the Destruction of Only One of the Infecting Microbes.*—In a few instances, notably in two cases in which there was found in association with a typical furunculosis a mixture of streptococci and staphylococci, the extinction of one of the microbes under the influence of the corresponding vaccine has indirectly led to the extinction of the other. This event, however, is extremely exceptional. In most cases, the employment of vaccine therapy directed to the destruction of a single species of microbe leaves the other species quite unaffected. It may even—and this applies in particular to surface infections of mucous membranes or ulcers—conduce to the multiplication of the competing microbe.

(b) *Case in which Vaccine Therapy is Directed to the Destruction of All the Infecting Microbes.*—When in cases of mixed infection measures are taken to im-

munize the patient against each of the different infections successful results have been achieved, notably in lupus, cystitis, and endometritis. While naturally the task of the immunizator is more laborious and more intricate in case two or three different vaccines are employed, it would seem that the organism of the patient does not find the task of responding to a series of different vaccines (always supposing that each of these is administered in appropriate and properly interspaced doses) more difficult than the task of responding to one variety of vaccine only.

(c) *Generalized Infections.*—In association with my fellow-workers, up to the present I have treated by vaccine therapy some half-dozen cases of Malta fever and an equal number of cases of streptococcal septicemia. In each of the cases of Malta fever the course of the disease would seem to have been favorably influenced, the clinical improvement standing in each case in relation with an increased development of antibacterial substances in the blood.

In the cases of streptococcal septicemia the results have been as follows: In two cases—one of these being a case of malignant endocarditis—a complete cure was achieved, in each case in association with a very satisfactory immunizing response. In a third case—also a case of malignant endocarditis—the high temperature which had lasted for three months before vaccine therapy was resorted to, came down to normal under the influence of the inoculations, the patient making an excellent immunizing response. In this case, death by cardiac complication occurred on the fourth day after defervescence. In three other cases of streptococcal endocarditis the patient succumbed, having in each case failed to make any immunizing response to the inoculations.

EVOLUTION OF MEDICAL EDUCATION IN THE ARMY.

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The recognition of the vital relation that a well organized and trained sanitary personnel bears to the efficiency of an army in the field has been of slow growth and there is yet an inadequate appreciation of that relationship in certain quarters, notwithstanding the awful lessons taught by sanitary unreadiness in many wars of recent times.

It would appear that there is still cherished a belief among many otherwise well informed persons that in the event of war an abundant number of skilled physicians and surgeons would be available for duty with troops. That is true, but the essential prerequisites of military training for the military physician is lost sight of. The well equipped military surgeon must understand, in addition to his purely professional duties, the complex subjects of medical administration, including the customs of the service; the hygiene of posts and camps; the service of the front and rear, during and after a battle; the establishment of field hospitals, of dressing and ambulance stations; the school of the soldier; the Hospital Corps drill; methods of removing wounded without litter; inspection and muster; the ration—how obtained and how managed; the preparation of reports—daily, every ten days, monthly, bimonthly, quarterly, semi-annually, yearly and occasionally; requisitions for medical supplies and clothing; and many other matters too numerous to mention at this time. The all-round medical officer is the product of special education and training and does not emerge ready for duty with troops from the lecture or dissecting room, or even from the ranks of experienced practitioners.

Most all governments have established medical schools for the education of the army medical department, and so necessary is this training of the military surgeon that the Secretary of War, on the recommendation of the Surgeon-General, then General Sternberg, directed the establishment of an Army Medical School in the city of Washington in 1893 for the instruction of approved candidates for admission to the medical corps in their duties as medical officers. The term at first occupied four months, from November 1 to February 28, but under the administration of General O'Reilly it has been extended to eight months, from October 1 to May 31, and medical officers of the militia are included among those eligible for admission. Under General O'Reilly also a change was made in the system of examining candidates to determine their fitness for admission to the corps. A preliminary examination of applicants is held at military posts in various parts of the country near the larger cities in order to reduce the expense of the candidate to the minimum. This examination is preceded by an investigation as to the physical condition of the applicant, and if this is found to be satisfactory he is examined in anatomy, physiology, practice of medicine and surgery and general and military hygiene. Those who are successful in passing this examination become student candidates, are given the appointment of contract surgeon and ordered to Washington to attend the next term of the Army Medical School. They receive mileage when traveling under orders which more than covers their traveling expenses and are paid $100 a month while in attendance at the school. At the close of the term all candidates are subjected to a rigid physical and professional examination and those found qualified are appointed in the order of their standing to fill existing vacancies in the Medical Department.

To stimulate emulation and reward industry students who receive at least 80 per cent. are rated as "proficient" and those who reach 90 per cent. or over are rated as "proficient with honor" on certificates of graduation, and those commissioned in the Medical Corps are borne on the Army Register as "graduates" or "honor graduates" as the case may be. During the course the students are subject to military discipline and their character, habits and general deportment closely observed, and if for any valid reason a student candidate for commission is deemed undesirable his contract may at any time be annuled by the Surgeon-General.

The school consists of a president and such instructors, assistant instructors, student officers, student candidates and enlisted men as may be assigned to duty with it by the War Department. The course of instruction is both theoretical and practical and embraces the following subjects:

1. Duties of medical officers.
2. Medical Department administration and customs of the service.
3. Military hygiene.
4. Clinical microscopy.
5. Military surgery.
6. Tropical medicine.
7. Sanitary chemistry.
8. Hospital Corps drill.
9. Operative surgery.
10. Ophthalmology and optometry.
11. Military medicine.
12. *X*-ray work.
13. Equitation.

Candidates for graduation are examined in the above subjects, and student candidates in the following additional subjects, viz.:

14. Surgery.
15. Practice of medicine.
16. Diseases of women and children.
17. Obstetrics.
18. Hygiene.
19. Bacteriology.
20. Pathology.

The regulations for the school are very comprehensive and provide for all contingencies, but it is unnecessary to enumerate them, the educational features being the only ones which will be of interest here. They embrace every subject necessary to thoroughly equip the young medical officer for the duties he will ordinarily be called on to perform, and the practical outcome has been to bring the corps to the highest degree of professional efficiency.

In regard to the attendance and graduation of medical officers of the organized militia at the Army Medical School, I think it is a matter which should be encouraged. Great benefit will eventually result to the cause of military sanitation from the diffusion of the information there gained, and for that reason I believe the militia graduates of the school should return to their regiments and take up the duty of instructing other surgeons connected with state troops. It is obvious that this will result in much benefit to the cause of military sanitation, and although a slow process I think it will be acknowledged to be better than the much slower and more imperfect mode at present in use.

A complete system of military education for the entire army has by degrees been perfected and covers every arm and department of the service. The schools comprised in this system in addition to the Army Medical School are:

1. The Military Academy at West Point for the education of cadets.
2. Post schools for the instruction of enlisted men.
3. At each military post a garrison school for the instruction of officers in the subjects pertaining to their ordinary duties.
4. Special service schools—
   (a) The Artillery School at Fort Monroe, Va.
   (b) The Engineer School, Washington Barracks, D. C.
   (c) The School of Submarine Defense, Fort Totten, N. Y.
   (d) The School of Application for Cavalry and Field Artillery, Fort Riley, Kansas.
   (f) The Signal School, Fort Leavenworth, Kansas.
   (g) The Infantry and Cavalry School, Fort Leavenworth, Kansas.
5. The Staff College, Fort Leavenworth, Kansas.
6. The Army War College, Washington, D. C.
7. The Military department of civil institutions at which officers of the army are detailed under the provisions of law.

The army in time of peace may be regarded as a vast educational institution. At many of these schools a course in military hygiene is included in the curricula. At West Point instruction in this subject is given by a professor of military hygiene, who is a medical officer and a member of the academic board. At the infantry and cavalry school, Ft. Leavenworth, and at the garrison schools for artillery, infantry and cavalry military hygiene is taught.

By General Orders No. 128, War Department, Series of 1906, officers of cavalry and infantry for promotion from second to first lieutenant and from first lieutenant to captain must pass an examination in military hygiene sufficiently extended to show familiarity with the subjects as treated in the authorized text-book.

Officers of the artillery corps for promotion from second lieutenant to first lieutenant are required to pass an oral examination in military hygiene.

Naturally all men of the Hospital Corps are instructed under the supervision of medical officers in the duties of litter bearers and the methods of rendering first aid to the sick and wounded and in the various subjects pertaining to the sanitary soldier.

In addition to this, special instruction in the methods of rendering first aid to the sick and wounded is given to all enlisted men of the line of the army by their company officers.

From the above hasty summary of the educational work being done in our army it is evident that the importance of the sanitary care of troops is becoming more and more recognized and that in time it will come fully into its own and be regarded as of equal importance in conducting campaigns and gaining victories as tactics, strategy, marksmanship or any other single measure on which success may depend.

NUMERICAL STATEMENT OF EXAMINATION OF APPLICANTS FOR APPOINTMENT IN THE MEDICAL CORPS OF THE ARMY FROM JAN. 1, 1888, TO DEC. 31, 1906.

Year.	Number of applicants examined.	RESULTS OF EXAMINATION							
		Approved.		Physically disqualified		Withdrew		Rejected	
		Num.	Per ct.	Num.	Per ct.	Num.	Per ct.	Num.	Per ct.
1888	24	2	8.33	6	25.	13	54.17	3	12.5
1889	45	6	13.33	15	33.33	14	31.11	10	22.22
1890	40	6	15.	6	15.	3	7.5	25	62.5
1891	43	10	23.26	13	30.23	10	23.26	10	23.26
1892	59	12	20.34	13	22.03	21	35.6	13	22.03
1893	59	13	22.03	13	22.03	2	3.39	31	52.55
1894*	....	....	....	....	....	....	....	....	....
1895	41	5	12.2	17	41.46	2	4.88	17	41.46
1896	39	8	20.51	11	28.2	3	7.7	17	43.59
1897	34	6	17.65	8	23.53	9	26.47	11	32.35
1898	178	33	18.54	44	24.72	18	10.11	83	46.63
1899*	....	....	....	....	....	....	....	....	....
1900	82	28	34.15	11	13.41	21	25.61	22	26.83
1901	308	65	21.11	97	31.49	56	18.18	90	29.22
1902	191	46	24.08	38	19.9	74	38.74	33	17.28
1903	131	25	19.08	35	26.72	40	30.54	31	23.66
1904	67	11	16.42	19	28.36	4	5.97	33	49.25
Totals	1341	276	20.58	346	25.8	290	21.63	429	31.99

*No examination.

NOTE.—Prior to July 1, 1904, the examination embraced inquiry into all branches of medical education, with appointment of approved applicants at its termination. The examination prescribed in "Circular of Information" approved by Secretary of War, June 21, 1904, consisting of a preliminary examination, a course of instruction at the Army Medical School, and a final or qualifying examination has obtained since July 1, 1904.

Year.	Number of applicants examined.	PRELIMINARY EXAMINATION.							
		Qualified.		Physically disqualified		Withdrew.		Rejected.	
		Num.	Per ct.	Num.	Per ct.	Num.	Per ct.	Num.	Per ct.
1904	18	3	16.67	3	16.67	2	11.11	10	55.55
1905	64	19	29.69	15	23.44	4	6.25	26	40.62
1906	88	13	14.78	26	29.54	6	6.82	43	48.86
Totals	170	35	20.59	44	25.88	12	7.06	79	46.47

Year	Student candidates examined.	QUALIFYING EXAMINATION.					
		Approved.		Physically disqualified		Rejected.	
		Num.	Per ct.	Num.	Per ct.	Num.	Per ct.
1904	4	4	100.				
1905	16	11	68.75	2	12.5	3	18.75
1906							
Totals	20	15	75.	2	10.	3	15.

NOTE: The percentage of candidates admitted to the medical department has progressively increased, as shown by the table. This is undoubtedly due to improved educational requirements by many medical colleges throughout the country. The admissions for 1905 and 1906 are very large on account of the requirement of a second examination for admission after an attendance of nine months at the Army Medical School in Washington.

Clinical Notes

BILATERAL TUBAL PREGNANCY.

HARRY GREENBERG, M.D.
MILWAUKEE, WIS.

History.—Mrs. M. B., aged 29, married 6 years, has one child 3 years old, no miscarriages, menses always regular and normal. The last menstruation occurred as usual after 28 days, but was accompanied by considerable pain, which necessitated her taking to bed. A piece of membrane was passed on the third day, after which the pain and flow ceased. The physician consulted diagnosed miscarriage and advised removal to a hospital for curettement. I saw her for the first time on the following day at the hospital.

Examination.—Patient a medium-sized woman, poorly nourished, very anemic, mucous membranes almost white and skin of a dirty sallow color. She said she was always pale. She complained of feeling weak, loss of appetite, restlessness and sleeplessness. No pain. Temperature 101.8 F., pulse 106. Thoracic and abdominal organs negative. Uterus slightly enlarged and somewhat tender at the fundus. Uterine adnexa somewhat thickened. A waiting course was advised. After a few days her temperature and pulse came down to normal and her general condition improved markedly. This condition continued unchanged for six weeks. At the end of that period while resting comfortably in bed she suddenly developed a chill, her temperature rose to 102.8 F. and she appeared in general considerably depressed. On micturition passed dark red blood along with the urine. Under stimulations her general condition improved, while the bladder symptoms continued unabated; blood was passed in large quantities at frequent intervals. Local aplications to the interior of the bladder seemed to aggravate the condition. A pelvic examination three days later revealed the uterus enlarged, tender to the touch and situated high up in the pelvic cavity. On either side of the uterus was a soft, semi-fluctuating mass of about the size of a hen's' egg; these masses having evidently developed during the past six weeks, and from the fact that she has not again menstruated a diagnosis of ectopic gestation with the possibility of the rupture of the ectopic sac into the bladder was made. Surgical intervention was advised and consented to.

Operation.—Fluid and clotted blood was found in lower abdomen. Several coils of intestines firmly adherent to pelvic organs. On separating the adhesions a sausage-shaped mass, bleeding from its distal extremity and continuous with the left horn of the uterus was found and removed. This proved to be the left Fallopian tube filled with clotted blood and membrane and ruptured at its fimbriated end. On the right side a similar but larger mass was found. This mass rested slightly on the interior uterine wall, but mainly on the bladder wall between its peritoneal attachment to the uterus and the symphysis pubis, and was firmly adherent to that viscus. On separating it from the bladder, a rent about ⅛ inch in diameter was disclosed in the bladder wall, corresponding to a similar rent in the removed mass. This mass, like the first, proved to be an ectopic tube.

This case is reported because of the rarity and significance of the bladder complication. There seems to be no adequate reason for the rupture of the bladder to have taken place. No history of bladder trouble that might have weakened its walls could be elicited. Ocular and manual examination revealed no diseased condition there. The path of least resistance could certainly not be considered in this instance. I can only explain it as one of Nature's freaks which can not generally be accounted for, but for which the surgeon need always be on his guard.

A CASE OF INDURATING EDEMA OF THE PENIS.

O. L. SUGGETT, M.D.
ST. LOUIS.

Attracted by the paper of Dr. Taylor on indurating edema in THE JOURNAL, July 13, I am led to report the following case. I agree with him as to the extreme rarity of this condition, having encountered but this single case in seven years of private and dispensary practice, the latter comprising a clinic of from one hundred and fifty to two hundred cases of syphilis monthly. In my available text-books I find indurating edema mentioned specifically in but two, Mracek and Gottheil, the latter classifying it as a variety of the initial lesion, the former supplementing a short description of the condition with an excellent water color reproduction depicting the condition in a labium majus. In the light of my present information I believe I have observed a few such cases in the secondary period in women, but I was unable at the time to place them in their proper category.

History.—My case began in no unusual manner, the initial lesion being quite ordinary, small, exulcerated, situated in the sulcus, imbedded in an induration very moderate in extent and hardness and fairly well defined. The patient had a prepuce which entirely covered the glans and which was easily retracted, but in the second week of the evolution of the chancre it began to assume the indurating edema which finally entirely prevented its retraction. The induration extended gradually over the skin of the entire penis back to a point near its root.

Examination.—On palpation the condition feels in no way like the ordinary edema of lymphangitis, which is a complication of many venereal cases, being firm and elastic and violaceous in color, nor yet was it hardly as firm as the sclerosis surrounding an ordinary chancre, this difference being noticeable at the margin of the site of infection, where it merged into the indurative edema of the contiguous skin. The condition was very obstinate and remained long after the chancre had healed. In proper time he developed an ordinary macular eruption interspersed here and there with a few papules.

Subsequent History.—I lost sight of him, but at the time of his disappearence, although his other symptoms were on the wane, there was but little, if any difference in the size or consistency of the penis. There was a sufficient subsidence in the acute inflammatory condition of the chancre and its immediate vicinity to permit me to separate the prepuce from the glans sufficiently to see that it was healed. I can not say, however, what the ultimate results of prolonged and proper treatment would have been.

The Physician's Remuneration.—A poorly supported doctor is generally one who can not keep up-to-date in mental equipment or in instrumental armamentarium and the patients of that man will suffer.—*California State Journal of Medicine.*

MEDICAL SCHOOLS OF THE UNITED STATES

Below is given a brief description of the medical colleges in the United States that are legally chartered to confer the degree of doctor of medicine, and whose diplomas are recognized by at least one state licensing board. The list includes the sectarian as well as the regular colleges, as their graduates are physicians in the eyes of the law. The information given is obtained from reports and from the catalogues and has been submitted to the dean of each school for his inspection and approval. Colleges which belong to the Association of American Medical Colleges or the Southern Medical College Association or other organization of colleges have requirements for admission of students according to the rules of these associations, unless their requirements are higher, in which case a statement is made to that effect. Extracts from these rules are given at the close of the list of colleges. Population figures for states are taken from the United States Bureau of Education estimates for 1905, and for cities from the United States Census Bureau's estimate for 1903.

ALABAMA.

Alabama, population 1,986,347, has two medical colleges, the Medical College of Alabama and the Birmingham Medical College, located in Mobile and in Birmingham. The population of Mobile is 40,686 and of Birmingham 42,087. Board and room may be obtained from $12 to $20 per month.

Birmingham.

BIRMINGHAM MEDICAL COLLEGE.—This school was incorporated in 1894 and is situated in Birmingham. The Hillman, St. Vincent's, Pratt and County hospitals are accessible to the students. There are 18 professors and 9 assistants, total 28. The school is a member of the Southern Medical College Association. The course of instruction embraces four separate sessions of six months each. The fees are $75 for each of the first three years and $100 for the fourth. The Dean is Dr. B. L. Wyman. Registration, 1906-7, 113; graduates, 12. The fourteenth session opens Oct. 2, 1907, and closes April 2, 1908.

Mobile.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF ALABAMA.—This school was organized in 1859 as the Medical College of Alabama. It became the Medical Department of the University of Alabama in 1897. Name changed to the above in 1907. The faculty consists of 8 professors and 15 lecturers and assistants, a total of 23. The City Hospital furnishes clinical material. The college is a member of the Southern Medical College Association. The course of study covers four years of seven months each. The total fees for each of the first three years is $100; for the fourth year, $125. The Dean is Dr. George A. Ketchum. Total registration, 1906-7, 170; graduates, 28. The forty-second session will begin Oct. 2, 1907, and will close May 1, 1908.

ARKANSAS.

Arkansas, population 1,403,239, has two medical colleges, both located in Little Rock, a city of 42,036 people. Board and lodging cost from $13 to $18 per month.

Little Rock.

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT.—This college was organized in 1879 as the Arkansas Industrial University Medical Department. The faculty consists of 15 professors and 20 lecturers and assistants, total 35. Hospital facilities are furnished by Logan H. Roots Memorial Hospital, St. Vincent's Infirmary and Pulaski County Hospital, the latter having a capacity of 200 beds. The course of study covers four years of seven months each. The Secretary is Dr. F. L. French. The fees are: Matriculation, $5, paid but once; tuition, per year, $60; graduation fee, $25. Total registration, 1906-7, was 182; graduates, 26. The twenty-ninth session begins Oct. 1, 1907, and ends May 1, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1906, and has a faculty of 25 professors and 14 lecturers and assistants, a total of 39. It occupies the buildings formerly used by the Maddox Seminary. The course of study covers four years of seven months each. The Dean is Dr. J. P. Runyan. The total enrolment for 1906-7 was 87; graduates, 11. The second session begins Oct. 2, 1907, and ends April 30, 1908.

CALIFORNIA.

California, population 1,620,883, has seven medical colleges. Four are located in San Francisco, a city having, before the earthquake, 355,919 inhabitants. They are Cooper Medical College, Medical Department of the University of California, Hahnemann Medical College of the Pacific and the College of Physicians and Surgeons. Board and lodging can be obtained for from $20 to $30 a month. The College of Medicine of the University of Southern California and the College of Physicians and Surgeons are situated in Los Angeles, population 116,420. Board and lodging can be obtained in that city for $4 a week and upward. The Oakland College of Medicine and Surgery is in Oakland, population 70,386.

Los Angeles.

UNIVERSITY OF SOUTHERN CALIFORNIA COLLEGE OF MEDICINE.—This school was organized in 1885, and has a faculty of 29 professors and 19 instructors, 48 in all. The County Hospital having 200 beds, the Emergency Hospital of 160 beds, the Children's Hospital of 20 beds, and a college dispensary furnish clinical material. This college is a member of the Association of American Medical Colleges, and gives no admission examination. The course covers four years of eight months each. The fees for each year are $115. The Dean is Dr. William D. Babcock. Total registration for 1906-7 was 99; graduates, 27. The twenty-third session opens Oct. 3, 1907, and closes June 11, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1903. The course covers four years of nine months each. The faculty consists of 28 professors and 11 lecturers and instructors, a total of 39. The Dean is Dr. Charles W. Bryson, Delta Building, Los Angeles. The registration for 1906-7 was 34; graduates, 2. The fifth session begins Sept. 26, 1907, and ends June 26, 1908.

Oakland.

OAKLAND COLLEGE OF MEDICINE AND SURGERY.—Organized in 1900; opened in 1902; first class graduated in 1906. The length of the course is nine months. The classes are limited to ten students each. The Registrar is Dr. Edward N. Ewer. The faculty numbers 28. Tuition is $150 yearly. Total registration, 1906-7, 10; graduates, 2. The sixth session begins Aug. 19, 1907, and ends May 22, 1908.

San Francisco.

COOPER MEDICAL COLLEGE.—This school was organized in 1858, though its present name was not adopted until 1882. The faculty consists of 18 professors and 41 lecturers, instructors, etc., 59 in all. Lane Hospital, adjoining the college, the City and County Hospital, containing 464 beds, and the college dispensary furnish clinical material. This school is a member of the Association of American Medical Colleges. The course covers four years of eight and a half months each. Fees: Matriculation, $5; course fee for each year, $150; laboratory fee for each year, $10; breakage deposit each year, $10; graduation fee, $25; no other charges. The Dean is Dr. Henry Gibbons, Jr. Total registration for 1906-7 was 112; graduates, 29. The thirty-ninth session opens Aug. 15, 1907, and closes May 8, 1908.

UNIVERSITY OF CALIFORNIA MEDICAL DEPARTMENT.—This department of the State University was organized in 1872, and has a faculty composed of 18 professors, 44 associates and assistants, a total of 62. The City and County Hospital and the college dispensary furnish good clinical material. The college also has its own hospital with 43 beds. The course covers four years of nine months each. This school is a member of the Association of American Medical Colleges. Two full college years' work is required of all applicants for admission. The fees are: Matriculation, $5; tuition, $150 each year; laboratory fees extra. The Dean is Dr. Arnold A. D'Ancona. Total registration for 1906-7 was 54; graduates, 24. The thirty-fifth session opens Aug. 15, 1907, and will close May 15, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.—This school was organized in 1896 and has a faculty of 28 professors and 15 associate professors and teachers, a total of 43. The hospital facilities consist of the City and County Hospital and St. Winifred Hospital, with 50 beds. Attendance on four terms of at least 30 teaching weeks each is required for graduation. Fees, $100 per year. The Dean is Dr. D. A. Hodghead. Registration for 1906-7 was 79; graduates, 16. The twelfth session opens Sept. 16, 1907, and closes May 14, 1908.

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC.—Homeopathic. This school was organized in 1884. The Dean is Dr. James W. Ward, 606 Sutter St., San Francisco. Total enrolment for 1906-7 was 28; graduates, 2. The twenty-fifth session begins Sept. 12, 1907, and will close May 23, 1908.

COLORADO.

Colorado, with a population of 539,700, has three medical colleges. Two of these, Denver and Gross College of Medicine and Westminster University College of Medicine, are in Denver, which has a population of 144,588; the other, the Colorado School of Medicine, is at Boulder, population 6,150. Board can be obtained in Denver for $5 a week and upward.

Boulder.

COLORADO SCHOOL OF MEDICINE.—This is the Medical Department of the University of Colorado, and was opened in 1883. The University Hospital, under the control of the state, and equipped to accommodate 40 patients, and the Sanitarium furnish clinical material. Both hospital and dispensary clinics are offered and the sanatorium located at Boulder offers additional advantages in this line. The faculty embraces 18 professors and 9 lecturers and assistants, a total of 37. This school is a member of the Association of American Medical Colleges. The work embraces a graded course of four years of nine months each. The tuition is $50 per year; there are no other fees. The Dean is Dr. Luman M. Giffin. Total registration for 1906-7 was 58; graduates, 12. The twenty-sixth session begins Sept. 11, 1907, and closes June 7, 1908.

Denver.

THE DENVER AND GROSS COLLEGE OF MEDICINE.—This is the Medical Department of the University of Denver, and was organized in 1902 by the union of the Gross Medical College (organized 1887) and the Denver College of Medicine (organized 1880). The college dispensary, the Denver County Hospital, St. Luke's Hospital, St. Anthony's Hospital, St. Joseph's Hospital, National Jewish Hospital for Consumptives, Home for Dependent Children, the City Contagious Hospital and Mercy Sanitarium furnish clinical material. The faculty is made up of 34 professors, 36 assistants and instructors, a total of 70. The course covers four years of eight months. The college is a member of the Association of American Medical Colleges. Fees for the first year are $115. For the second year, $116. Third year, $101. Fourth year, $126. Total registration, 1906-7, was 101; graduates, 29. The twenty-sixth session will begin Sept. 10, 1907, and close May 15, 1908. The Dean is Dr. S. G. Bonney.

WESTMINSTER UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1894 as the Denver Homeopathic College, but in 1907 became non-sectarian, with the above name. Clinical facilities are furnished by the City and County Hospital, the Park Avenue Hospital and the Tabernacle Free Dispensary. The faculty numbers 37. The course of study covers four years of eight months each. Fees: A five-year scholarship, $350, payable in advance, otherwise tuition is $135 a year; matriculation fee, $5, payable but once. The Dean is Dr. J. B. Kinley. Total registration for 1906-7 was 42; graduates, 6. The thirteenth session begins Sept. 9, 1907, and ends May 14, 1908.

CONNECTICUT.

Connecticut, with a population of 989,500, has only one medical college, located in New Haven, population 114,600. Board and lodging cost $4.50 and upward per week.

New Haven.

YALE MEDICAL SCHOOL.—This is the Department of Medicine of Yale University. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. In 1879 the name was changed to the one now used. Clinical material is furnished by the New Haven Hospital, having 175 beds, Springside Hospital, the State Hospital for the Insane with its 1,800 patients, and a college dispensary. The faculty consists of 12 professors and 44 lecturers and assistants, a total of 56. The course covers four years of nine months each. This college is a member of the Association of American Medical Colleges. The fees are $150 each year; in the first year there are additional fees amounting to $18, and in the second, $8, and there is a graduation fee of $10. The Dean is Dr. Herbert E. Smith, New Haven. During the session of 1906-7 there were 153 matriculants and 29 graduates. The ninety-fifth sessions opens Sept. 26, 1907, and closes June 24, 1908.

DISTRICT OF COLUMBIA.

Washington, population 293,217, has three medical colleges; George Washington University Department of Medicine, Georgetown University School of Medicine and Howard University Medical Department. Board and lodging can be had at reasonable rates.

Washington.

THE GEORGE WASHINGTON UNIVERSITY, DEPARTMENT OF MEDICINE.—This school was organized in 1821 as the Department of Medicine of Columbian College, which in 1873 became Columbian University, and in 1904, by an act of Congress, changed its name to the George Washington University. The University Hospital, the Garfield Hospital, the Children's Hospital, the Central Dispensary and Emergency Hospital, the Providence Hospital, the Columbia Hospital, the Episcopal Eye and Ear Hospital, the U. S. Government Hospital for the Insane, and the Lutheran Eye and Ear Infirmary afford opportunities for clinical instruction. The faculty is composed of 40 professors and 41 instructors, demonstrators and assistants. This school is a member of the Association of American Medical Colleges. Beginning with the session of 1909-10 matriculants must present credentials of two years' work in a college of liberal arts or its equivalent. A combined course of six years' work, leading to the degrees of A.B. and M.D. is offered. The course of instruction extends through four years of eight months each. The total fees for the first year are $157; for the second year, $152; for the third year, $112, and for the fourth year, $162. A breakage deposit of $5 is required. The Dean is Dr. W. F. R. Phillips, 1607 16th St., N. W. The total registration for 1906-7 was 215; graduates, 63. The eighty-sixth session begins Sept. 25, 1907, and closes June 3, 1908.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE.—This school organized in 1850, controls the Georgetown University Hospital, which affords clinical facilities. Clinics are also held in Providence Hospital, containing 500 beds, at the Government Hospital for the Insane, containing over 2,000 beds; in the Children's Hospital, the Central Dispensary, Emergency Hospital and the Garfield Hospital. The faculty contains 19 professors, 54 instructors and assistants, total, 73. The school is a member of the Association of American Medical Colleges. The course of study extends over four terms of eight and one-half months each. The fees are $150 each year. The Dean is Dr. George M. Kober, 1600 T St. The registration for 1906-7 was 82; graduates, 12. The fifty-seventh session opens Sept. 27, 1907, and ends June 11, 1908.

HOWARD UNIVERSITY MEDICAL DEPARTMENT.—This institution was organized in 1867, and is open to all, without regard to sex or race. Colored students compose a majority of those in attendance. The Freedman's Hospital is a general hospital of 300 beds. The faculty comprises 17 professors and 27 lecturers and assistants, 44 in all. This college is a member of the Association of American Medical Colleges. The course covers four years of eight months each. The fees of each session are $100, plus $10 for graduation. The Dean is Dr. Robert Reyburn, 2129 F St. Registration for 1906-7 was 186; graduates, 44. The fortieth session begins Oct. 1, 1907, and closes June 1, 1908.

GEORGIA.

Georgia, population 2,405,821, has five medical colleges; Medical College of Georgia, located in Augusta, population 41,283; Atlanta College of Physicians and Surgeons, Atlanta School of Medicine, Georgia School of Eclectic Medicine and Surgery, and the International Medical Missionary College, are in Atlanta, a city of 96,550 population. Board and lodging may be obtained for from $3 to $5 per week.

Atlanta.

ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS.—This school was formed in 1898 by the consolidation of the Atlanta Medical College, organized in 1854, with the Southern Medical College, organized in 1879. It has a faculty of 19 professors and 22 assistants, a total of 41. Clinical facilities are furnished by the Grady Hospital. The course of study covers four years of seven months each. Fees: First and second years, $75 each; third and fourth, $100 each. The Dean is Dr. W. S. Elkins, 29 Luckie St. Total registration of students for 1906-7 was 200; graduates, 37. Next session begins Oct. 1, 1907, and closes May 1, 1908.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This school was organized in 1839 and has a faculty of 16. The Proctor is Dr. Elzie B. Thomas, 121 Park St., West End. Total number of students for 1906-7 was 76; graduates, 12. The next session opens Oct. 3, 1907, and closes April 1, 1908 (about).

ATLANTA SCHOOL OF MEDICINE.—This school was organized in 1905. The course covers four years of seven months each. Enrolment for 1906-7 was 233. Number of graduates, 20. The third session begins Sept. 27, 1907, and ends April 30, 1908. The Dean is Dr. George H. Noble. The Proctor is Dr. Edward G. Jones.

INTERNATIONAL MEDICAL MISSIONARY MEDICAL COLLEGE.—This school was organized in 1905. Enrolment for 1906-7 was 12; 1 graduate. The Dean is Dr. J. McFadden Gaston.

Augusta.

MEDICAL COLLEGE OF GEORGIA.—This school was organized as a medical academy in 1829, and in 1873 was made the Medical Department of the University of Georgia. Its faculty includes 18 professors and 12 assistants, 30 in all. The course is four years of seven months each. This school is a member of the Southern Medical College Association. The City Hospital, with 130 beds; Lamar Hospital, with 80 beds; the Polyclinic and the Hospital for Contagious Diseases supply clinical material. Fees for the first two years are $75 each; third year, $100, and $130 for the last year. The Dean is Dr. Joseph Eve Allen. The total enrolment for 1906-7 was 98; graduates, 20. The seventy-sixth session begins Oct. 1, 1907, and ends May 1, 1908.

ILLINOIS.

Illinois, population 5,319,150, has fourteen medical colleges, four of which are night schools, all located in Chicago, a city of 1,873,880 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, Hahnemann Medical College, Bennett College of Eclectic Medicine and Surgery, College of Physicians and Surgeons, Hering Medical College, Jenner Medical College, Illinois Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University, Chicago College of Medicine and Surgery, Dearborn Medical College, and Reliance Medical College. Room and board cost $3 a week and upward.

Chicago.

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 to 1898, and in the latter year became affiliated with the University of Chicago. The faculty is composed of 83 professors, 155 associates, instructors, etc., a total of 238. Clinical facilities are furnished by Cook County Hospital, caring for about 20,000 patients yearly; Presbyterian Hospital, with 250 beds; a college dispensary, and an obstetric department. The requirements for admission are those of admission to the better universities or colleges, and, in addition thereto, two years of college work. This college work must have included courses in college chemistry (inorganic, organic and qualitative analysis), college physics and biology, all with laboratory work, and a reading knowledge of German or French. The course covers four years of three quarters each, a quarter being three months. An optional fifth year, consisting of a hospital internship or of a fellowship in one of the departments is offered. A continuous session is held, but credit for more than three quarters can not be obtained in any calendar year. A combined course for six years years confers degrees of both science and medicine. All freshman and sophomore studies are given at the University of Chicago. The total fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Deans are Dr. Frank Billings, 100 State St., and Dr. John M. Dodson, 34 Washington St. Total registration 1906-7 was 567; graduates 83. The sixty-fifth fiscal year begins July 1.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1881, and in 1896 became the Medical Department of the University of Illinois. The faculty is composed of 42 professors, 156 assistants and instructors, a total of 198. The West Side Hospital, containing 125 beds; Cook County Hospital, and a college dispensary and maternity clinic supply clinical material. This school is a member of the Association of American Medical Colleges. The collegiate year is divided into two terms; the winter term of thirty-six weeks and the summer term of twelve weeks, of actual teaching. Attendance on the winter term is required in order to secure credit for a year's work, and attendance on four winter terms is required for graduation. The fees are $145 each

for the first two years, $150 for the third, and $175 for the fourth year. The Dean is Dr. William E. Quine, 103 State St. Total registration for 1906-7 was 501; graduates, 146. The fall term begins Oct. 1, 1907, and ends June 9, 1908.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.—This school was organized in 1859 as the Medical Department of Lind University, became independent as the Chicago Medical College in 1864, and in 1869 assumed its present relation as Medical Department of Northwestern University. The faculty comprises 38 professors and 78 assistants and instructors, in all 116. Wesley Hospital, with 225 beds, Mercy Hospital, containing 400 beds; Provident Hospital, 100 beds; St. Luke's, 200 beds; the Chicago Lying-in Hospital, and a college free dispensary furnish clinical facilities. Applicants for admission must, by diploma, certificate or examination, show possession of the educational requirements required to enter the College of Liberal Arts of Northwestern University. The course of study covers four years of thirty-six weeks each. Final examinations are held at the end of each semester. The fees for each year are $175, and a matriculation fee of $5, paid once, is charged. The Dean is Dr. N. S. Davis, Chicago Savings Bank Building. The total registration for 1906-7 was 473; graduates, 134. The forty-eighth session opens Oct. 1, 1907, and closes May 31, 1908.

AMERICAN MEDICAL MISSIONARY COLLEGE.—This school was organized in 1895 and has the primal object of educating men and women as missionary physicians. The faculty numbers 28. The work of the first two years is carried on at Battle Creek, Mich., and that of the last two years in Chicago. A hospital with 20 beds, in connection with the college, together with dispensaries in both cities, supply material for practical work. The college is a member of the Association of American Medical Colleges. The course covers four years of nine months each. Total fees are $80 for each of the four years. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1906-7 was 46; graduates, 10. The thirteenth session opens Sept. 17, 1907, and closes June 12, 1908.

ILLINOIS MEDICAL COLLEGE.—This school, organized in 1894, has a faculty of 34 professors and 16 assistants, a total of 50. A college dispensary and Cook County Hospital are available for clinical study. The college is a member of the Association of American Medical Colleges. Attendance for seven months during each year is necessary for graduation. Total fees are about $125 for each year. The Dean is Dr. B. B. Eads, 103 State St. Total registration for 1906-7 was 212; graduates, 40. The thirteenth session begins Sept. 1, 1907, and ends April 10, 1908.

JENNER MEDICAL COLLEGE.—This is a day and evening school, organized in 1892. The faculty consists of 46 professors and 7 assistants, 53 in all. The course covers four years of 40 weeks each. The total fees each year are $100, with a $5 matriculation fee, paid but once. The Registrar is Dr. J. G. Tyssowski, 196 Washington St. Total enrolment for 1906-7 was 185; graduates, 19. The next session begins Sept. 3, 1907, and will end June 27, 1908.

DEARBORN MEDICAL COLLEGE.—This school was organized in 1903, with a faculty of 40 professors and 5 assistants, a total of 45. The instruction, which is given in the evening, extends over a period of five years. The total fees are: $5 matriculation fee, $110 tuition, and $10 laboratory deposit. The Secretary is Dr. Paul J. Faber. Total registration for 1906-7 was 126; graduates, 26. The next session begins Sept. 2, 1907, and ends June 23, 1908.

HAHNEMANN MEDICAL COLLEGE.—Homeopathic. This school was organized in 1859, and has a faculty of 80. Hahnemann Hospital and a college dispensary supply clinical material. The course is four years of eight months each. Fees: Matriculation, paid once, $5; each semester, $50, and hospital tickets, $5 each for third and fourth years. The Registrar is Dr. W. Henry Wilson. Total registration 1906-7 was 136; graduates, 42. The forty-eighth session begins Sept. 30, 1907, and ends May 23, 1908.

HERING MEDICAL COLLEGE.—Homeopathic. This school was organized in 1892. Dunham Medical College, organized in 1895, was consolidated with it in August, 1902. In January, 1905, it purchased the Chicago Homeopathic College Building at 350 South Wood St., opposite Cook County Hospital, which it now occupies. The faculty comprises 35 professors and 30 associates, lecturers, etc., in all 65. Chicago Homeopathic, Frances Willard and Cook County hospitals supply clinical facilities. The course covers four years of eight months each. The total fees for a full course are $300 if paid in advance, or $100 per year. The Dean is Dr. H. C. Allen. Total registration for 1906-7 was 80; graduates, 11. The fifteenth session begins Sept. 30, 1907, and ends June 1, 1908.

COLLEGE OF MEDICINE AND SURGERY.—Physio-Medical. Organized in 1896. It has a faculty of 34 professors and 3 assistants. The course covers four years of eight months each. Fees for the first, second and third years, $110 each, and $115 for the fourth. The Secretary is Dr. N. La Doit Johnson, 1146 Washington Blvd. Total registration for 1906-7 was 28; graduates, 2. The next session begins Sept. 26, 1907, and ends May 17, 1908.

BENNETT COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This school, organized in 1868, has a faculty of 40 professors and 12 assistants, 52 in all. The Bennett, Cook County and Baptist hospitals and a college dispensary supply clinical facilities. The course covers four years of thirty weeks each. This school is a member of the National Confederation of Eclectic Medical Colleges. Fees for each year are $100, with a matriculation fee, paid once, of $5. The Secretary is Dr. William J. Pollock. Total registration, 1906-7 was 153; graduates, 34. The fortieth session begins Sept. 24, 1907, and ends May 2, 1906.

CHICAGO COLLEGE OF MEDICINE AND SURGERY.—This school was founded in 1901 as the American College of Medicine and Surgery. Name changed to the present title in 1907. The course is four years of eight months each. Frances E. Willard and Cook County hospitals supply clinical material. The Secretary is Dr. J. N. Roe. The annual fee is $100; matriculation fee is $5. The enrolment, 1906-7 was 239; graduates, 35. The seventh session begins Sept. 25, 1907, and closes May 22, 1908.

NATIONAL MEDICAL UNIVERSITY.—This school was organized in 1891. Total enrolment for 1906-7 was about 250; graduates, 24. The Dean is Dr. L. D. Rogers.

RELIANCE MEDICAL COLLEGE.—This institution has just been organized as a night school. It has leased the building and equipment of the Illinois Medical College for the hours 6 to 10 p. m. The president is Dr. J. F. Burkholder. The first session begins Sept. 2, 1907.

INDIANA.

Indiana, population, 2,678,492, has five medical colleges. Four are situated in Indianapolis, a city of 191,033 people: The Indiana Medical College, the Eclectic Medical College, the Physio-Medical College of Indiana, and the State College of Physicians and Surgeons. Board and lodging can be obtained from $3 a week upward. The School of Medicine, Indiana University, is situated in Bloomington, a city of 5,000.

Bloomington and Indianapolis.

INDIANA UNIVERSITY SCHOOL OF MEDICINE AND THE AFFILIATED STATE COLLEGE OF PHYSICIANS AND SURGEONS.—These affiliated schools give together the four years of the medical course, and are members of the Association of American Medical Colleges. The first two years at Bloomington were organized in 1903. The affiliated State College of Physicians and Surgeons at Indianapolis where the last two years are taught, was organized in 1906. In the college building the school maintains its own hospital of 75 beds for clinical instruction, and also a dispensary. Students are admitted directly from commissioned high schools, but in 1910 one year of collegiate work will be required. The combined faculty consists of 40 professors, 22 instructors and 15 special lecturers, a total of 77. The enrolment in 1906-7 was 109; graduates, 25. The next session at Bloomington begins Sept. 22, 1907, and ends June 25, 1908. The Secretary is Dr. B. D. Myers. The next session at Indianapolis begins September 8 and ends May 20, 1908. The Secretary is Dr. John F. Barnhill. Commencement May 20, 1908, at Indiana University, Bloomington, Ind.

Indianapolis.

INDIANA MEDICAL COLLEGE, THE SCHOOL OF MEDICINE OF PURDUE UNIVERSITY.—Organized in 1869 as The Medical College of Indiana, Medical Department of the University of Indianapolis. In September, 1905, it consolidated with Purdue University, the Central College of Physicians and Surgeons and the Ft. Wayne College of Medicine, and assumed above title. The faculty embraces 50 professors and 60 lecturers, demonstrators and assistants. Clinical facilities are furnished by the Bobbs Free Dispensary and Maternity Hospital, Indianapolis City Hospital, St. Vincent's Hospital and the Indiana Central Hospital for the Insane. The course covers four years of eight and a half months. This college is a member of the Association of American Medical Colleges. The Dean is Dr. Henry Jameson, Newton Claypool Bldg. Total fees per term, $100. The total enrolment for 1906-7 was 227; graduates, 70. The next session begins Sept. 10, 1907, and ends May 20, 1908.

ECLECTIC MEDICAL COLLEGE OF INDIANA.—This school was organized in 1900. It had 12 students and 3 graduates in 1907. The Dean is Dr. T. M. Culver. The next session begins Sept. 17, 1907, and ends April 15, 1908.

PHYSIO-MEDICAL COLLEGE OF INDIANA.—This school was organized in 1873 and has a faculty of 47. The course is four years of eight months each. Total fees for each year $90. The Secretary is Dr. C. T. Bedford, Newton Claypool Bldg. Total enrolment 1906-7 was 25; graduates, 7. The next session begins Sept. 11, 1907, and closes May 9, 1908.

IOWA.

Iowa, population 2,391,633, has five medical colleges. The College of Medicine of the State University of Iowa and the College of Homeopathic Medicine of the State University of Iowa are located in Iowa City, population 7,987. In Des Moines, population 62,139, is the College of Medicine of Drake University. In Sioux City, population 31,701, is the Sioux City College of Medicine. In Keokuk, population 14,803, is the Keokuk Medical College, College of Physicians and Surgeons. Board and lodging may be had in Des Moines for $15 a month and upward, and in the other cities named for from $2.50 to $5 per week.

Des Moines.

DRAKE UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1882 under the name of the Iowa College of Physicians and Surgeons. In 1900 it became affiliated with Drake University. The faculty consists of 20 professors and 32 assistants, a total of 52. The Mercy and Methodist hospitals, 200 beds, and a dispensary furnish clinical material. The college is a member of the Association of American Medical Colleges. The requirement for admission is a four-year high school education or its equivalent. The work covers four years of nine months each. The total fees for the first two years are $107 each; for the last two years, $80 each. The Dean is Dr. D. S. Fairchild. The total registration for 1906-7 was 76; graduates, 17. The twenty-fifth session begins Sept. 16, 1907, and ends June 18, 1908.

Iowa City.

COLLEGE OF MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This department was organized in 1870. The faculty is made up of 10 professors, 17 lecturers, demonstrators and assistants, a total of 17. The University Hospital, built in 1897 at a cost of $50,000, supplies the clinical material. The school is a member of the Association of American Medical Colleges. The course of study covers four years of thirty-six weeks each. Total fees for each year are $50. The Dean is Dr. James R. Guthrie, Dubuque; Vice-Dean, Dr. Walter L. Bierring, Iowa City. Total number of students registered for 1906-7 was 272; graduates, 52. The thirty-eighth session opens Sept. 18, 1907, and ends June 12, 1908.

COLLEGE OF HOMEOPATHIC MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This was organized in 1877. The faculty is composed of 9 professors and 10 lecturers and assistants, a total of 19. The

work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa. The fees are also the same. The Dean is Dr. George Royal, Des Moines. Total registration for 1906-7 was 44; graduates, 4. The thirty-first session begins Sept. 18, 1907, and ends June 12, 1908.

Keokuk.

KEOKUK MEDICAL COLLEGE, COLLEGE OF PHYSICIANS AND SURGEONS.—In 1849 the College of Physicians and Surgeons, Keokuk, was organized and four years later it became the Medical Department of the University of Iowa, continuing as such until 1870, when the original name was resumed. In 1899 it united with the Keokuk Medical College, organized in 1890, taking the above name. St. Joseph's Hospital, having 100 beds, furnishes clinical material. The faculty is composed of 21 professors and 7 assistants and demonstrators, 28 in all. The course covers four years of eight months each. The total fees for the first year are $66; for the second, $61; for the third, $64, and $61 for the last year. The Secretary is Dr. W. B. La Force. Total registration for 1906-7 was 127; graduates, 30. The next session begins Sept. 17, 1907, and ends May 13, 1908.

Sioux City.

SIOUX CITY COLLEGE OF MEDICINE—This school was organized in 1891. The faculty consists of 24 regular professors, besides a corps of assistants. Clinical material is supplied by St. Joseph, St. Vincent and Samaritan hospitals and a College Dispensary. The college is a member of the Association of American Medical Colleges. The course covers four years of nine months each. The college is affiliated with Morning Side College, a literary and scientific institution, and after 1910 two years of academic work in the arts and sciences will be necessary for matriculation in addition to the four-year high school course now requisite. Matriculation fee, payable but once, $5; tuition each year, $60. Hospital fees, $5; graduating fees, $20. Total enrolment for 1906-7 was 29; graduates, 10. The President is Dr. F. E. Franchere. The eighteenth session opens Sept. 17, 1907, and closes June 4, 1908.

KANSAS.

Population, 1,582,473, has three medical colleges. Kansas Medical College is in Topeka, population 35,388, the Eclectic Medical University at Kansas City, and the School of Medicine of the University of Kansas, giving its first two years in Lawrence, population, 11,123, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 228,412. Board and lodging in all these places may be had for $3 to $5 per week.

Kansas City.

ECLECTIC MEDICAL UNIVERSITY.—This school was organized at Kansas City, Mo., in 1898, moving to Kansas City, Kan., in 1907. Its faculty numbers 25. The curriculum covers four years of seven months each. Fees, about $70 each year, with a graduation fee of $15. The Dean is Dr. Theodore Doyle. Total number of students for 1906-7 was 36; graduates, 9. The tenth session begins Sept. 16, 1907, and ends April 30, 1908.

Lawrence and Kansas City.

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Was organized in 1880. In 1905 it merged with three Kansas City Schools, viz., the Kansas City Medical College, founded in 1869; the College of Physicians and Surgeons, founded in 1893, and the Medico-Chirurgical College, founded in 1896. This school is a member of the Association of American Medical Colleges. The faculty, including lecturers and clinical assistants, numbers 79. The course covers four years of about nine months each. The school has three dispensaries, a hospital of its own and the use of one public and three private hospitals. A combined course of six years is offered, conferring, after six years, the degrees of A.B. and M.D. The total fees are, for the first two years, $60 per year (and for non-residents of the state $70); for the last two years, $100 per year. The Dean at Lawrence is Dr. Mervin T. Sudler. The Dean at Kansas City is Dr. George Howard Hoxie. The number of students registered for 1906-7 was 115; graduates, 29. The next session begins Sept. 11, 1907, and will end June 4, 1908.

Topeka.

KANSAS MEDICAL COLLEGE, MEDICAL DEPARTMENT OF WASHBURN COLLEGE.—This college, organized in 1890, has a faculty of 28 professors and 12 lecturers and assistants, 40 in all. Christ's Hospital, with 100 beds, Topeka State Hospital; the dispensary in the college building also supplies material for demonstration. The college is a member of the Association of American Medical Colleges. The college building affords ample laboratory and lecture-room space. The course of study is a graded one, covering four years of thirty weeks each. The total fees are $75 each year. The Dean is Dr. William S. Lindsay; Secretary, Dr. William McVey. The total registration for 1906-7 was 82; graduates, 14. The eighteenth session begins Sept. 3, 1907, and closes April 22, 1908.

KENTUCKY.

Kentucky, population 2,291,444, has six medical colleges. They are all situated in Louisville, a city of 215,945 inhabitants, and are as follows: University of Louisville Medical Department, Kentucky School of Medicine, Louisville Medical College, Hospital College of Medicine, Southwestern Homeopathic Medical College, and Louisville National Medical College. Board and lodging in Louisville cost from $3 to $4 per week.

Louisville.

KENTUCKY SCHOOL OF MEDICINE.—This school was organized in 1850 and has a faculty composed of 20 professors, 27 lecturers, instructors and assistants, a total of 47. It is a lineal descendant of the Medical Department of Transylvania University, then situated at Lexington, Ky. The College Hospital, City Hospital and the college dispensary furnish facilities for clinical study. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of 30 weeks each. The fees for the first three years are $75 each; for the fourth year, $100. The Dean is Dr. W. H. Wathen, 628½ Fourth Avenue. Total number of students registered for 1906-7 was 270; graduates, 66. The next session begins Dec. 15, 1907, and will end June 12, 1908.

LOUISVILLE MEDICAL COLLEGE.—This school was organized in 1869 and has a faculty of 12 professors and 18 instructors and assistants, 30 in all. The City Hospital, College Infirmary and a dispensary offer clinical facilities. This school is a member of the Association of American Medical Colleges. The course of study covers four years of six months each. The fees are $75 each year, with graduating fee of $25. The Secretary is Dr. Irvin Abell. Total registration for 1906-7 was 180; graduates, 53. The next session opens Dec. 11, 1907, and closes July 1, 1908.

HOSPITAL COLLEGE OF MEDICINE.—This school is the medical department of Central University of Kentucky and was organized in 1873. The faculty is composed of 17 professors and 20 assistants, lecturers, etc., a total of 37. The Gray Street Infirmary, City Hospital and a college dispensary furnish clinical material. This college is a member of the Association of American Medical Colleges. The course covers four years of seven months each. Total fees for each of first three years, $75, and $100 for the fourth year. The Dean is Dr. P. Richard Taylor. Total enrolment for 1906-7 was 256; graduates, 94. The thirty-fourth session opens Jan. 1, 1908, and closes July 31, 1908.

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT.—This school was organized in 1837 as the Louisville Medical Institute and in 1846 assumed its present title. In 1907 it merged with the Kentucky University Medical Department. It has a faculty of 28 professors and 27 lecturers and assistants, a total of 55. The University Hospital, City Hospital, SS. Mary and Elizabeth Hospital and the college dispensary furnish clinical material. The course covers four years of 30 weeks each. The fees will be $75 each year. The total enrolment for 1906-7 was 456; graduates, 158. The President is Dr. J. M. Bodine; the Dean is Dr. T. C. Evans. The next session opens Dec. 1, 1907, and closes June 30, 1908.

LOUISVILLE NATIONAL MEDICAL COLLEGE.—Colored. This was chartered in 1888 and shows a teaching force of 25. It has a four-year course, seven months to the year; the fees are $58, $58, $55 and $50 for the four years respectively. The Dean is Dr. E. S. Porter, Tenth and Walnut. The attendance, 1906-7, was 50; graduates, 13. The next session opens Oct. 2, 1907, and ends May 17, 1908.

SOUTHWESTERN HOMEOPATHIC MEDICAL COLLEGE.—This college was organized in 1892 and has a faculty of 17 professors and 10 lecturers and assistants, 27 in all. A college dispensary and Louisville City Hospital supply clinical material. The curriculum covers four years of seven months each. Total fees: First and second years, $80; third, $70, and $65 for the fourth. The Dean is Dr. Geo. S. Coon. Total number of students for 1906-7 was 11; graduates, 1. The fifteenth session opens Sept. 26, 1907, and closes April 24, 1907.

LOUISIANA.

Louisiana, having a population of 1,513,145, contains two medical colleges: Medical Department of the Tulane University of Louisiana and New Orleans University. They are both situated in New Orleans, a city of 300,625 people. The cost of room and board is from $16 to $22 a month.

New Orleans.

MEDICAL DEPARTMENT OF THE TULANE UNIVERSITY OF LOUISIANA.—This school was organized in 1834 as the Medical College of Louisiana, and became by law, in 1847, the Medical Department of the University of Louisiana, and in 1884 the Medical Department of the Tulane University of Louisiana. Professors and instructors number over 60. Charity Hospital, with 900 beds, furnishes clinical material. The Milliken Memorial Hospital, with a capacity for 200 children, is also available. The course covers four years of twenty-eight weeks each. Total fees for the first two years are $135 each and for the third and fourth $140 and $170 respectively. The Dean is Dr. Stanford E. Chaille, P. O. Drawer 261. The total enrolment for 1906-7 was 516; graduates, 91. The seventy-fourth session begins Oct. 21, 1907, and will close May 20, 1908.

FLINT MEDICAL COLLEGE OF NEW ORLEANS UNIVERSITY.—Colored. This school was organized in 1889 as the Medical College of New Orleans University. Name changed to the above in 1901. The faculty consists of 10 professors, 6 lecturers and instructors, 16 in all. Clinical material is supplied by the Sarah Goodridge Hospital and by an outdoor clinic. This college is a member of the Association of American Medical Colleges. The course covers four years of thirty weeks each. Total fees, $50 each year. The Dean is Dr. A. D. Bush, 1566 Canal St. Total enrolment for 1906-7 was 51; graduates, 9. The eighteenth session begins Oct. 1, 1907, and ends May 7, 1908.

MAINE.

Maine, population 711,156, has one medical college, located in Portland, population 52,656. Board and lodging cost from $3 to $5 a week.

Portland.

MEDICAL SCHOOL OF MAINE.—This, the Medical Department of Bowdoin College, was organized in 1820. It has 14 professors and 20 instructors, total 34. Students of the first and second years are instructed in Brunswick, while the third and fourth year classes are taught in Portland, where are situated the Maine General Hospital and other clinical advantages. The course covers

four years of eight months each. The total fees are $120 for the first year; for the second and third, $110, and $110 for the fourth year. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students in 1906-7 was 94; graduates, 16. The next session opens Oct. 24, 1906, and closes June 25, 1908.

MARYLAND.

Maryland, with a population of 1,260,869, contains eight medical colleges, all located in Baltimore, a city with 531,313 inhabitants. They are as follows: School of Medicine of the University of Maryland, College of Physicians and Surgeons, Baltimore University School of Medicine, Baltimore Medical College, Women's Medical College, Southern Homeopathic Medical College, Johns Hopkins Medical School and Maryland Medical College. Board and lodging can be obtained for from $3 to $5 per week.

Baltimore.

JOHNS HOPKINS MEDICAL SCHOOL.—This is the Medical Department of Johns Hopkins University, and was organized in 1893. The faculty comprises 11 professors, 84 lecturers, clinical professors, associate professors, associates, instructors and assistants, a total of 95. The Johns Hopkins Hospital and Dispensary, including a lying-in department, furnishes clinical material. The requirements for admission demand that the applicant either has (a) completed the chemical-biologic course which leads to the A.B. degree in the university; (b) graduated at an approved college or scientific school and can furnish evidence of an acquaintance with Latin and a fair reading knowledge of French and German, and a knowledge of physics, chemistry and biology, such as may be obtained from a year's course, including laboratory instruction. The school is a member of the Association of American Medical Colleges. The course extends over four years of eight and one-half months each. The charge for tuition is $200 per annum, with no fees unless a microscope is rented; that fee is $5 a year. The Dean is Dr. William H. Howell, 232 West Lanvale St. Total registration in 1906-7, was 264; graduates, 70. The fifteenth session begins Oct. 1, 1907, and ends June 9, 1908.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE.—This institution was organized in 1807 as the College of Medicine of Maryland, and in 1812, other faculties having been added, the whole was chartered under the name of the University of Maryland. The faculty is composed of 14 professors, 46 associates and lecturers, etc., a total of 60. The University Hospital, Presbyterian Eye, Ear and Throat Charity Hospital, the Hospital for the Relief of Crippled and Deformed Children, containing 40 beds; the Maternity Hospital and a college dispensary furnish material for clinical study. This school is a member of the Association of American Medical Colleges. The course covers four years of eight months each. The total fees for the first two years are $135 each; for the third year, $125, and $155 for the final year. The Dean is Dr. R. Dorsey Coale. The total number of students registered in 1906-7 was 311; graduates, 62. The one hundred and first session begins Oct. 1, 1907, and terminates June 1, 1908.

BALTIMORE MEDICAL COLLEGE.—This college was organized in 1881 and has a faculty of 59. The clinical material is furnished by the Maryland General Hospital, having 200 beds; the Maryland Lying-in Hospital, the Mount Hope Retreat, St. Vincent Infant Asylum, and the college dispensary. This college belongs to the Association of American Medical Colleges. The course covers four years of eight months each. The Dean is Dr. David Streett. The total number of students registered in 1906-7 was 481; graduates, 97. The twenty-seventh session opens Sept. 20, 1907, and closes May 20, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1872, and in 1878 Washington University School of Medicine, established in 1827, was consolidated with it. The faculty numbers 53. Clinical facilities are supplied by the Baltimore City Hospital, containing 225 beds; the Hospital for the Colored Race, containing 100 beds; the Nursery and Child's Hospital, with 150 beds; the Maryland Lying-in Asylum and a college dispensary. This school is a member of the Association of American Medical Colleges. The work covers four years of eight months each. Total fees are $115, $115, $115 and $135 for the respective years. The Dean is Dr. Charles F. Bevan. The total number of students registered in 1906-7 was 302; graduates, 75. The next session opens Oct. 1, 1907, and terminates June 1, 1908.

MARYLAND MEDICAL COLLEGE.—This school was organized in 1898 and has a faculty of 19 professors, 25 associates, lecturers, etc., 44 in all. The Franklin Square Hospital, West End Maternité and a college dispensary furnish clinical material. The course of study covers four years of nine months each. A matriculation fee of $5 and total laboratory fees for the four years of $55 are charged; tuition is $75 each year. The Dean is Dr. J. B. Schwatka, 1003 North Broadway. Total registration for 1906-7 was 125; graduates, 29. The tenth session begins Oct. 1, 1907, and closes June 1, 1908.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty of 15 professors, 19 associates, assistants and lecturers, a total of 34. The Hospital of the Woman's Medical College and a college dispensary furnish clinical material. The college is a member of the Association of American Medical Colleges. The course covers four years of eight months each. The total fees for the first three years are $106 each and $81 for the last year, with $30 graduation fee. The Dean is Dr. S. Griffith Davis, 1230 Light St. Total number registered for 1906-7 was 34; graduates, 6. The twenty-sixth session opens Oct. 1, 1907, and closes May 31, 1908.

ATLANTIC MEDICAL COLLEGE.—Homeopathic. This school was organized in 1890 as the Southern Homeopathic Medical College, but assumed the above name in 1907. The faculty consists of 9 professors and 28 lecturers and assistants, a total of 37. The Maryland Homeopathic Hospital with 40 beds, St. Luke's Hospital with 35 beds, and the college dispensary furnish clinical material. The course covers four years of eight months each. The fees are $100 for the first two years, $75 for the third, and $105 for the fourth year. The Dean is Dr. Eldridge C. Price, 1012 Madison Ave. The enrolment for 1906-7 was 22; number of graduates, 11. The seventeenth session begins Oct. 2, 1907, and ends June 4, 1908.

BALTIMORE UNIVERSITY SCHOOL OF MEDICINE.—This school, organized in 1884, has a faculty of 8 professors and 16 lecturers, demonstrators, etc., in all 24. The Baltimore University Hospital and the Lying-in Hospital supply clinical material. The course is four years of nine months each. The fees are $100 each year. The Dean is Dr. Theodore Cooke, Jr., 1808 No. Charles St. Total registration for 1906-7 was 23; graduates, 5. The next session opens Oct. 1, 1907, and closes June 15, 1908.

MASSACHUSETTS.

Massachusetts, population 3,088,546, has four medical colleges: Medical School for Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 594,618 inhabitants. Board and lodging can be obtained for from $5 to $7 per week.

Boston.

MEDICAL SCHOOL OF HARVARD UNIVERSITY.—This was organized in 1782 and has a faculty of 32 professors, 116 associates and assistants, etc., a total of 148. Clinical facilities are furnished by the Boston City Hospital, the Massachusetts General Hospital, the Boston Lying-in Hospital, the Boston Dispensary, the Infants' Hospital, the Children's Hospital, Long Island Hospital, containing 250 beds, and the Marine Hospital. Candidates for admission "must present a degree in arts, literature, philosophy or science from a recognized college or scientific school, with the exception of such persons as may be admitted by special vote of the faculty. Each candidate is required to hand in the original note book in which he recorded the work performed by him in quantitative analysis, also to pass a written examination in theoretical and descriptive chemistry, and must have a knowledge of elementary organic chemistry. If conditioned in chemistry six months are allowed in which to remove the condition. Fees: Matriculation, $5; $200 each year. The Dean is Dr. William L. Richardson, 688 Boylston St. The total registration for 1906-7 was 366; graduates, 64. The 126th session begins Sept. 26, 1907, and ends June 25, 1908.

TUFTS COLLEGE MEDICAL SCHOOL.—This school was organized in 1893 as the Medical Department of Tufts College. It has a faculty of 34 professors, 61 assistants and lecturers, etc., a total of 95. Clinical material is furnished by the Boston City Hospital, Massachusetts Charitable Eye and Ear Infirmary, Free Home for Consumptives, Free Hospital for Women, Boston Dispensary, Cambridge Hospital, St. Elizabeth's Hospital and Carney Hospital. Graduates of an approved high school, college or university and also graduates of approved preparatory schools are admitted without examination; all others must pass an examination in English, Latin, physics and mathematics, including elementary algebra and plane geometry, besides one elective subject to be chosen from American history, French, German, chemistry or biology. The course covers four years of eight months each. The total fees are $150 each year. The Secretary is Dr. Frederic M. Briggs, 31 Massachusetts Ave. Total number of students for 1906-7 was 376; graduates, 57. The fourteenth session begins Sept. 25, 1907, and ends May 25, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1880 and has a faculty of 27 professors and 18 lecturers and assistants, a total of 45. Clinical facilities are furnished by the North End Dispensary Hospital, Union General Hospital and the city and state institutions. The course of study covers four years of nine months each. The total fees for the first year are $100 and for each of the other years about $110, with a graduation fee of $30. The Dean is Dr. C. H. Cobb, Hotel Oxford, Boston. Total students registered 1906-7 was 123; graduates, 26. The twenty-eighth session begins Sept. 18, 1907, and ends June 20, 1908.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.—Homeopathic. This school was organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The faculty includes 20 professors, 32 associates, etc., a total of 52. Clinical material is furnished by the Massachusetts Homeopathic Hospital, containing 235 beds, an out-patient department, a maternity hospital and the Westborough Insane Hospital, 800 patients. Candidates who have taken their degrees in arts, philosophy or science are not examined: certificates of graduation from approved high and preparatory schools accepted in lieu of entrance examinations; all others are examined in English, Latin, French or German, history, mathematics, physics and chemistry. The course covers four years of eight months each. Total fees for the first year are $105; for the second and third, $125 each, and for the last year $155. The Dean is Dr. John P. Sutherland, 302 Beacon St. Total registration for 1906-7 was 96; graduates, 13. The thirty-fifth session opens Oct. 3, 1907, and closes June 3, 1908.

MICHIGAN.

Michigan, population 2,557,275, has five medical colleges. Two of these, University of Michigan Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a city of 16,033 people. Board and lodging cost from $2.50 to $5 a week. Detroit, a city of 309,653 inhabitants, contains three medical colleges, as follows: Detroit College of Medicine, Detroit Homeopathic College and the Michigan College of Medicine and Surgery. Board and room can be obtained for $3 a week and upward.

Ann Arbor.

UNIVERSITY OF MICHIGAN DEPARTMENT OF MEDICINE AND SURGERY.—This was organized in 1850. A class was graduated in 1851 and each subsequent year. It has a faculty composed of 16 professors, 48 associates, instructors, etc., a total of 64. The University Hospital, with 200 beds, furnishes clinical facilities. The minimum requirements for admission provide that the applicant

be a graduate of an approved high school and present certificates showing that he has completed three units of English and rhetoric, two units of history, three units of mathematics, including half a unit of plane trigonometry, one unit of physics, one unit of biology, or one-half unit of zoology and botany, and one unit of chemistry, two units of either German or French, and two units of Latin. (A unit equals one subject pursued for not less than four periods a week throughout the school year.) Beginning with the session of 1909-10 the entrance requirements will be two years of college work, equaling sixty hours of credit, as determined by the Department of Literature, Science and the Arts, of the University of Michigan, these two years of collegiate work to include a year of chemistry, physics and biology, including laboratory work, and a reading knowledge of one modern language. This school is a member of the Association of American Medical Colleges. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is $350 and for others about $400. The Dean is Dr. Victor C. Vaughan. The total registration for 1906-7 was 371; graduates, 52. The fifty-eighth session begins Sept. 24, 1907, and will end June 18, 1908.

HOMEOPATHIC COLLEGE, UNIVERSITY OF MICHIGAN.—This department of the university was organized in 1875. A class was graduated in 1877 and each subsequent year. The school has a faculty of 29 professors and 21 assistants, total 50; a part of the teaching force is from the Department of Medicine and Surgery. The Homeopathic Hospital, containing 140 beds, furnishes material for clinical teaching. The course covers four years of nine months each. The total fees for Michigan students are about $240 for the four years, and for other students about $295. The Dean is Dr. W. B. Hinsdale. The enrolment for 1906-7 was 82; graduates, 15. The thirty-second session begins Sept. 24, 1907, and closes June 18, 1908.

Detroit.

DETROIT COLLEGE OF MEDICINE.—This school was formed in 1885 by the union of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, established in 1880. The faculty embraces 26 professors, 72 lecturers, instructors, etc., a total of 98. Clinical facilities are offered by the following hospitals: St. Mary's and Harper, each of which contains a free dispensary; Woman's, St. Luke's, the Children's Free Hospital and the House of Providence. This school is a member of the Association of American Medical Colleges. The course covers four years of eight months each. Fees: Matriculation, paid once, $5; tuition, each term, $65; hospital and laboratory tickets, each $10, and diploma fee, $30. The Secretary is Dr. H. O. Walker. Total enrolment for 1906-7 was 158; graduates, 68. The twenty-third session begins Sept. 18, 1907, and closes May 28, 1908.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY.—Organized in 1888. In 1905 consolidated with the Saginaw Valley Medical College. The faculty numbers 36. The Dean is Dr. Hal. C. Wyman. Registration for 1906-7 was 6; no graduates. The next session begins Sept. 15, 1907, and ends June 1, 1908.

DETROIT HOMEOPATHIC COLLEGE.—This was organized in 1899 and has a faculty of 36. Grace Hospital and a college dispensary are available for study of clinical cases. The course embraces work for four years of eight months each. Fees: From $70 to $90 per year. The Dean is Dr. D. A. MacLachlan; Registrar, J. M. Griffin. Total enrolment for 1906-7 was 29; graduates, 9. The next session begins Sept. 15, 1907, and will close May 15, 1908.

MINNESOTA.

Minnesota, population 1,971,949, contains three medical colleges: The College of Medicine and Surgery of the University of Minnesota, the College of Homeopathic Medicine and Surgery of the University of Minnesota, and the Minneapolis College of Physicians and Surgeons, the Medical Department of Hamline University. They are all situated in Minneapolis. Minneapolis and St. Paul are practically one city, with a total population of 386,150. The average cost of board and lodging is $20 a month.

Minneapolis.

COLLEGE OF MEDICINE AND SURGERY, UNIVERSITY OF MINNESOTA.—This department of the University of Minnesota was created in 1883, and performed at that time the function of State Board of Medical Examiners, conferring after examination the degrees of B.M. and M.D., but doing no teaching. In 1888, by the consolidation and absorption of the Minnesota Hospital Medical College and the St. Paul Medical College, its present status was assumed. The faculty includes 43 professors and clinical professors, and 9 associate and assistant professors, 36 demonstrators and instructors, and 16 assistants, a total of 104. Eight hospitals in the twin cities, besides the University Dispensary, located near the campus, and the St. Paul Dispensary, under the control of the college, afford material for clinical study. The curriculum covers four years of nine months each. The entrance requirements are two years of university work in addition to four years of high school work. Total fees for each year, $100; microscope rental, $4 to $7 per annum. The total number of students registered in 1907 was 188; graduates, 37. The Dean is Dr. F. F. Wesbrook. The next session opens Sept. 17, 1907, and closes June 6, 1908.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1888. The faculty comprises 22 professors and 40 assistants, 62 in all. Instruction in the primary branches is received in common with the students of the College of Medicine and Surgery. The course is graded, extending over four years of nine months each. The total fees for the first two years are $100 each and $80 each for the last two years. The Dean is Dr. Eugene L. Mann. Total number of students registered in 1906-7 was 14; graduates, 6. The next session opens Sept. 13, 1907, and closes June 9, 1908.

MINNEAPOLIS COLLEGE OF PHYSICIANS AND SURGEONS.—Medical Department of Hamline University. This was organized in 1883. Its faculty is composed of 30 professors and 17 instructors, a total of 47. Clinical work is offered in City Hospital, Asbury Methodist Hospital, St. Barnabas and St. Mary's hospitals in Minneapolis, Luther Hospital, City and County and St. Joseph's in St. Paul and the college dispensary. This school belongs to the Association of American Medical Colleges. The course of study covers four years of eight and a half months each. Total fees, first year, $90; second year, $92.50, and for each of the last two $80. The Dean is Dr. George C. Barton. Total number of students 1906-7 was 109; graduates, 18. The next session begins Sept. 17, 1907, and ends June 10, 1908.

MISSISSIPPI.

Mississippi, population 1,682,105, has two medical colleges: The Medical Department of the University of Mississippi, located at Oxford, a city of 2,000 inhabitants, and the Mississippi Medical College, at Meridian, with a population of 15,079.

Meridian.

MISSISSIPPI MEDICAL COLLEGE.—This school was organized in 1906 and has a faculty of 14. The total enrolment for 1906-7 was 106; graduates, 22. The Dean is Dr. N. L. Clark. The second session begins Oct. 1, 1907, and ends April 1, 1908.

Oxford.

UNIVERSITY OF MISSISSIPPI MEDICAL DEPARTMENT.—This school was organized in 1903. The faculty consists of 6 professors and 2 assistants, a total of 8. Each college term extends over nine months. Only two years of the medical course are given. The school is a member of the Association of American Medical Colleges. Dr. W. S. Leathers is the Acting Dean. The total registration in 1905-6 was 18; graduates, none. The next session begins Sept. 21, 1907, and ends June 7, 1908.

MISSOURI.

Missouri, population 3,320,405, has eleven medical colleges. St. Louis, population 612,279, contains seven of these, viz., St. Louis College of Physicians and Surgeons, American Medical College, Homeopathic Medical College of Missouri, Medical Department St. Louis University, Washington University Medical Department, Barnes Medical College and the Hippocratean College of Medicine. Board and lodging can be procured for from $3.50 to $5 a week. Kansas City, which, with Kansas City, Kansas, has a total population of 228,412, has two colleges, namely: University Medical College and the Hahnemann Medical College of Kansas City. Room and board can be obtained in this city for from $3 to $5 a week. Ensworth-Central Medical College is located in St. Joseph, population 110,479. Board and room can be had for from $3.50 to $5 a week. The Department of Medicine of the University of Missouri is at Columbia, a town of 5,651. Board and lodging can be obtained at Columbia for from $2 to $5 a week.

Columbia.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF MISSOURI.—This department was organized at St. Louis in 1845; was discontinued in 1859, but was reorganized at Columbia in 1872. The faculty includes 11 professors, 19 assistant professors, lecturers, etc., a total of 30. Clinical facilities are supplied by the Parker Memorial State Hospital. The course covers four years of nine months each. The University offers also a combined course of six years, conferring degrees in both arts and medicine. The candidate for entrance must present, beside the diploma from a recognized four-year high school, credentials of college work as follows: English, physics, 6 hours; inorganic chemistry, 6 hours. This school is a member of the Association of American Medical Colleges. There is no charge for tuition, the only expenses being a library fee of $10 each year and small laboratory fees. The Dean is Dr. A. W. McAlester. Total registration of students for 1906-7 was 66; graduates, 2. The next session opens Sept. 9, 1907, and closes June 3, 1908.

Kansas City.

UNIVERSITY MEDICAL COLLEGE.—This was organized in 1881 as the University of Kansas City Medical Department, and in 1888 was reorganized under its present name. Its faculty comprises 30 professors and 35 lecturers and assistants, a total of 65. Clinical material is furnished by the University Hospital, with 100 beds; the City Hospital, German Hospital, Home for the Aged, containing 147 beds; the Sisters' Hospital, Scarritt and St. Margaret's hospitals, the Children's Home, St. Joseph's Orphan Asylum and the college dispensary. This school is a member of the Association of American Medical Colleges. The course of study covers four years of thirty weeks each and the work is graded. The total fees for each year are $100. The Dean is Dr. J. E. Logan, 1208 Wyandotte St. The total number of students registered in 1906-7 was 238; graduates, 57. The twenty-sixth session begins Sept. 6, 1907, and ends May 15, 1908.

KANSAS CITY HAHNEMANN MEDICAL COLLEGE.—This school was formed by the union of the Kansas City Homeopathic Medical College, organized in 1888, and the Kansas City University College of Homeopathic Medicine and Surgery. It has a faculty of 41. The City Hospital, Homeopathic Hospital, the Sanitarium, Scarritt, University, Women and Children's, German, Bethany and Children's hospitals and a college dispensary supply clinical material. The course covers four years of seven months each. The Dean is Dr. Frank Elliott, 1023 Grand Ave. Total registration for 1906-7 was 74; graduates, 11. The next session begins Sept. 12, 1907, and closes April 27, 1908.

St. Joseph.

THE ENSWORTH-CENTRAL MEDICAL COLLEGE.—This college was organized in 1876 as the St. Joseph Hospital Medical College. In 1882 it merged with the College of Physicians and Surgeons to form the St. Joseph Medical College. In 1888 changed name to Ensworth Medical College. In 1905 merged with the Central Medical College, organized in 1894, to form the Ensworth-Central Medical College. The faculty is composed of 28 professors, 12 lecturers and assistants, 40 in all. The Ensworth Deaconess Hospital, with 100 beds; St. Joseph, with 250 beds; City Hospital, containing 40 beds; the State Hospital, No. 2, which is open to the students once a week, and a college dispensary furnish clinical material. The curriculum covers four years of eight months each. The fees are $75 for each of the first three years; the fourth year, $95. The Secretary is Dr. T. E. Potter. Total enrolment for 1906-7, 117; graduates, 26. The next session opens Sept. 16, 1907, and will close about May 11, 1908.

St. Louis.

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1891 from the St. Louis Medical College, which was founded in 1842. In 1899 the Missouri Medical College, organized in 1840, was added. The faculty comprises 45 professors, 45 lecturers and instructors, a total of 90. Clinical material is furnished by the St. Louis Mullanphy Hospital, Washington University Hospital and Dispensary, Washington University Lying-in Hospital, Bethesda Hospital, Maternity Hospital, Martha Parson's Children's Hospital and O'Fallon Dispensary. This school is a member of the Association of American Medical Colleges. The course is four years of eight months each. The total fees are: For the first year, $130.75; second, $128.75; third, $115.25, and for the fourth, $101.25. The Dean is Dr. Robert Luedeking. Total enrolment for 1906-7 was 215; graduates, 50. The next session opens Sept. 26, 1907, and closes May 22, 1908.

ST. LOUIS UNIVERSITY MEDICAL DEPARTMENT.—This school was organized as the Marion-Sims-Beaumont Medical College in 1901 by the union of the Marion-Sims College of Medicine with the Beaumont Hospital Medical College. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 38 professors, 67 lecturers and assistants, a total of 105. Clinical facilities are offered by Alexian Brothers' Hospital, with 250 beds; Rebekah Hospital, 50 beds; Mt. St. Rose Throat and Chest Hospital, 150 beds; St. John's Hospital, 125 beds; St. Ann's Lying-in Hospital, 200 beds; St. Mary's Infirmary, containing 150 beds; the City Hospital and Insane Asylum and Grand Avenue Dispensary. This school is a member of the Association of American Medical Colleges. The curriculum covers four years of seven months each. The total fees for the first year are $100; for the second, third and fourth, $95 each. The Secretary is Dr. H. W. Loeb, 537 North Grand Ave. Total registration for 1906-7 was 268; graduates, 56. The next session opens Oct. 1, 1907, and closes May 19, 1908.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1878, and has a faculty of 24 professors, 15 lecturers, instructors, etc., a total of 39. The resources for clinical instruction are Jefferson Hospital; City Hospital, with 600 beds; Female Hospital, having 250 beds; City Insane Asylum; City Poorhouse, and the college dispensary. The course of study covers four years of seven months each. Total fees for the first year are $80; second and third, $75 each, and $85 for the fourth year. The Dean is Dr. Waldo Briggs, 2600 Gamble St. Total registration for 1906-7 was 270; graduates, 44. The next session begins Sept. 12, 1907, and ends May 1, 1908.

BARNES MEDICAL COLLEGE.—This school was organized in 1892, and has a faculty of 39 professors and 30 lecturers and assistants, a total of 69. Clinical advantages are offered by Centenary Hospital, with 150 beds; City Hospital and the college dispensary. The course of study covers four years of eight months each. The total fees for the first three years are $80 each year, and $90 for the fourth year. The Secretary is Dr. C. M. Ament, 1025 Missouri Trust Bldg. Total registration for 1906-7 was 352; graduates, 79. The next session opens Sept. 9, 1907, and closes May 9, 1908.

AMERICAN MEDICAL COLLEGE.—Eclectic. This was organized in 1873, and has a faculty of 17 professors. St. Louis City Hospital and a college dispensary supply clinical material. This college is a member of the National Confederation of Eclectic Medical Colleges. The course of study covers four years of seven months each. The total fees are: Tuition, $75 per year; dissecting material, $5 per year for four years; final examination and graduation fee, $25. Total registration for 1906-7 was 38; graduates, 9. The Dean is Dr. P. C. Clayberg, 2830 Lafayette Ave. The next session opens Sept. 16, 1907, and closes April 21, 1908.

HOMEOPATHIC MEDICAL COLLEGE OF MISSOURI.—This was organized in 1857, and has a faculty of 18 professors and 6 assistants, total 24. The curriculum covers four years of seven months each. Fees: First year, $80; second, $75; third, $60, and $75 for the fourth year. The Dean is Dr. L. C. McElwee, 1221 North Grand Ave. Total registration for 1906-7 was 44; graduates, 11. The next session begins Sept. 10, 1907, and ends April 23, 1908.

HIPPOCRATEAN COLLEGE OF MEDICINE.—A night school organized in 1907, situated at 3412 Morgan St. The Dean is Dr. Emory Lanphear.

NEBRASKA.

Nebraska, population 1,068,120, has four medical colleges: The University of Nebraska College of Medicine and John A. Creighton Medical College at Omaha, population 113,361, and Lincoln Medical College, and the Nebraska College of Medicine at Lincoln, population 44,243. Board and lodging can be obtained for from $3 to $5 a week.

Lincoln and Omaha.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE.—This was organized in 1880 as the Omaha Medical College. In 1902 an affiliation was entered into with the University of Nebraska, the name being changed to the College of Medicine of the University of Nebraska. The first two years are given at Lincoln. The last two years are given only at Omaha. The faculty is composed of 33 professors and 42 lecturers and instructors, total 75. The Douglas County, Immanuel, Jennie Edmunson, Wise Memorial and Omaha Methodist hospitals, the Child-Saving Institute, the Bancroft Street Rescue Home and the college dispensary furnish material for clinical study. The college can give an interneship to every capable student, and offers a *cum laude* degree at the close of a fifth year in hospital, or in research laboratory. For admission 32 points or 16 units of high school work are demanded; after Jan. 1, 1908, one full year of college work above the high school course will be required. The University offers an optional six-year combined course for the B.S. and M.D. degrees. The fees are approximately $100 per annum. The college is a member of the Association of American Medical Colleges. Total number of students enroled in 1906-7, 82; graduates, 16. The Dean is Dr. Henry B. Ward, University of Nebraska, Lincoln; the Dean of the Clinical Department is Dr. Harold Gifford, Omaha. The next session begins Sept. 17, 1907, and ends May 21, 1908.

Lincoln.

LINCOLN MEDICAL COLLEGE.—Eclectic. This was organized in 1889, and has a faculty of 22. This college is a member of the National Confederation of Eclectic Medical Colleges. The course of study covers four years of thirty weeks each. The total fees for the first year are $80; second and third, $75 each, and $85 for the fourth year, or $250 for all four years together. The Dean is Dr. F. L. Wilmeth. Total number of students for 1906-7 was 50; graduates, 12. The next session begins Sept. 5, 1907, and ends May 8, 1908.

NEBRASKA COLLEGE OF MEDICINE.—This college was organized in 1905. Its faculty consists of 23 professors and 5 assistants, a total of 28. Its course covers four years of eight months each. The Dean is Dr. J. F. Stevens. Registration of students during 1906-7 was 27; graduates, 7. The third session begins Sept. 17, 1907, and ends May 25, 1908.

Omaha.

JOHN A. CREIGHTON MEDICAL COLLEGE.—This school, organized in 1892, is the Medical Department of Creighton University, and has a faculty of 34 professors and 23 associates, lecturers and assistants, a total of 57. The clinical facilities are those of St. Joseph's Hospital, containing 300 beds; St. Bernard's Hospital, with 256 beds; Omaha General Hospital, with 100 beds; Douglas County Hospital, Mercy Hospital and the college dispensary. The school is a member of the Association of American Medical Colleges. The course of study embraces four years of eight months each. The total fees for the first two years are $90 each, and $85 for each of the last two years. The Dean is Dr. D. C. Bryant, McCague Bldg. Total number of students registered in 1906-7 was 167; graduates, 35. The sixteenth session begins Sept. 3, 1907, and ends May 3, 1908.

NEW HAMPSHIRE.

New Hampshire, population 429,118, contains one medical college, located in Hanover, population 1,884.

Hanover.

DARTMOUTH MEDICAL SCHOOL.—This is the Medical Department of Dartmouth College, and was organized in 1797. Its faculty is made up of 18 professors and 3 instructors, 21 in all. The Mary Hitchcock Memorial Hospital, a cottage hospital of 36 beds, supplies the clinical material. Applicants for admission must possess an education at least equivalent to graduation from a registered high school. The course covers four years of seven and a half months each. Fees: $100 each year. The Dean is Dr. William T. Smith. The total number of students registered for 1906-7 was 62; graduates, 11. The work for the first and second years begins with that of the academic department, commencing Sept. 19, 1907, and closing June 20, 1908; for the advanced classes it begins Aug. 6, 1907, and ends March 27, 1908.

NEW YORK.

New York State, population 7,901,754, has eleven medical colleges. Eight of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Eclectic Medical College of the City of New York, Cornell University Medical College, the University and Bellevue Hospital Medical College, and Forham University School of Medicine, are located in New York City, population 3,716,139. Board and lodging can be obtained for from $5 to $7 a week. Albany Medical College is in Albany, a city of 93,920 people, where board and room can be had for from $4 to $5 a week. The University of Buffalo Medical Department is situated in Buffalo, population of 381,403. Here board and lodging can be obtained for from $3.50 to $5 a week. The College of Medicine, Syracuse University, is in Syracuse, a city of 114,443 inhabitants. Board and lodging can be obtained for from $3.50 a week upward.

Albany.

ALBANY MEDICAL COLLEGE.—This school was organized in 1838, and in 1873 it assumed its present relations as Medical Department of Union University. The faculty is composed of 14 professors and 71 lecturers, instructors and assistants, a total of 85. Albany, St. Peter's, Child's and County hospitals, South End Dispensary, Eye and Ear Inurmary and the Albany Hospital for Incurables, also the free dispensaries connected with each, are open to students for clinical study. The curriculum covers four years of seven and one-half months each. Fees: First year, $130; second year, $145;

third year, $120, and fourth year, $130. The Dean is Dr. Samuel B. Ward. Total registration for 1906-7 was 195; graduates, 40. The next annual session opens Sept. 24, 1908, and closes May 5, 1908.

Buffalo.

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT.—This was organized in 1846 and has a faculty made up of 39 professors and 45 assistants, lecturers, etc., a total of 84. Buffalo General Hospital, Hospital of the Sisters of Charity, Erie County and German hospitals, the German Deaconess' Hospital and a college dispensary supply clinical material. This school is a member of the Association of American Medical Colleges. The course covers four years of eight months each. The tuition is $125 each year; this does not include laboratory fees. The Dean is Dr. Matthew D. Mann, 37 Allen St. Total registration for 1906-7 was 214; graduates, 59. The sixty-second session opens Sept. 23, 1907, and closes May 29, 1908.

New York City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1807 and its present relation, that of Medical Department of Columbia University, was assumed in 1860. The faculty embraces 38 professors and 112 demonstrators, instructors, etc., a total of 150. The Vanderbilt Clinic, Roosevelt, Bellevue, New York, Presbyterian, St. Luke's and General Memorial hospitals, Hospital for the Ruptured and Crippled, St. Mary's Free Hospital for Children, Willard Parker, Scarlet Fever and Reception, Riverside, New York Eye and Ear Infirmary, Foundling, and the Babies' Hospital and others offer clinical advantages. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the first year are $225; for the second and third, $250, and $275 for the fourth year. Total registration for 1906-7 was 387; graduates, 93. The next session begins Sept. 25, 1907, and ends June 10, 1908.

LONG ISLAND COLLEGE HOSPITAL.—This was organized in 1858 and has a faculty of 20 professors and 120 assistants, instructors, etc., a total of 140. Long Island College Hospital, containing 300 beds, Polhemus Memorial Clinic, Dudley Memorial and Hoagland Laboratory are a part of the college. Members of the faculty attend Kings County, St. John's, Brooklyn, Norwegian, Williamsburg, Methodist Episcopal and the Brooklyn Eye and Ear hospitals, where the students are offered opportunities for clinical study. The course covers four years of thirty weeks each. Fees: First year, $195; second, $200; third, $160, and $195 for the fourth year. The Secretary is Dr. Joseph H. Raymond. Total registration, 1906-7, was 342; graduates, 87. The fiftieth session opens Oct. 1, 1906, and closes June 6, 1908.

CORNELL UNIVERSITY MEDICAL COLLEGE.—This department of Cornell University was established in 1898. The faculty is composed of 49 professors and 124 instructors and assistants, a total of 173. The City Hospital, having 1,000 beds; Bellevue Hospital, New York Hospital, Presbyterian, Willard Parker and Reception with 200 beds; New York Skin and Cancer; St. Francis, having a capacity of 230 beds; St. Vincent's, with 200 beds; the Manhattan Eye and Ear Infirmary and a large college dispensary furnish clinical resources. The first two years of the course are taken at Ithaca or at New York. Fees: First year, $190; second and third, $185 each, and $200 for the fourth year. The Dean is Dr. William M. Polk. Total registration for 1906-7 was 342; graduates, 72. The next session opens Sept. 25, 1907, and closes June 10, 1908.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.—This is a department of the New York University, and was founded in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. The faculty is composed of 39 professors and 64 instructors, assistants, etc., in all 103. Bellevue and City hospitals, hospitals of the workhouse and almshouse, Manhattan State Hospital for the Insane, Willard Parker and Reception hospitals, Riverside Hospital for Contagious Diseases, Randall's Island, Presbyterian, St. Luke's, St. Vincent's, General Memorial, Gouverneur, Columbus, Harlem, New York Foundling and the Society for the Lying-in hospitals, the New York Eye and Ear Infirmary and a college dispensary furnish clinical material. The course covers four years of eight months each. Fees: First year, $185; second and third, $180 each, and $195 for the fourth year. The Dean is Dr. Egbert Le Fevre. Total registration for 1906-7 was 502; graduates, 68. The next session opens Oct. 2, 1907, and closes June 3, 1908.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL.—This school, organized in 1858, has a faculty of 35 professors and 44 lecturers, instructors, etc., 79 in all. Flower Hospital, adjoining the college and having an out-patient department; Metropolitan Hospital, New York Ophthalmic Hospital and the Laura Franklin Free Hospital for Children furnish clinical facilities. The course covers four years of seven months each. Total fees for the first year, $130; second, $130; third, $125, and $155 for the fourth year. The Dean is Dr. W. H. King, 64 West Fifty-first St. Total registration for 1906-7 was 109; graduates, 22. The next session begins Oct. 1, 1907, and ends May 14, 1908.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN.—Homeopathic. This school was organized in 1863 and has a faculty of 23 professors, 20 lecturers and assistants, total 43. The college hospital and dispensary, the Memorial Hospital for Women, Metropolitan, Ophthalmic and the Laura Franklin Free Hospital for Children afford clinical material. The course covers four years of twenty-six weeks each. Fees: First year, $150; second, $150; third, $135, and $155 for the fourth year. The Dean is Dr. Helen Cooley Palmer, 5 West Eighty-second St. Total registration for 1906-7 was 24; graduates, 4. The next session opens Oct. 1, 1907, and closes May 14, 1908.

ECLECTIC MEDICAL COLLEGE OF THE CITY OF NEW YORK.—This was organized in 1865 and has a faculty of 15 professors and 26 lecturers, demonstrators, etc., 41 in all. A college dispensary, Beachonian Dispensary, Manhattan and Red Cross hospitals and Muncie Sanatorium supply clinical facilities. The work covers four years of seven months each. The total fees: For each of the first three years, $125, and $155 for the fourth year. The Dean is Dr. George W. Boskowitz. Total registration for 1906-7 was 83; graduates, 11. The next session opens Sept. 25, 1907, and closes May 15, 1908.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE.—This school was organized in 1905 and has a faculty of 25 professors and 23 assistants, a total of 28. The Fordham Hospital; the St. Francis Hospital, with 300 beds, and Lincoln Hospital, with 200 beds, furnish clinical material. The course of instruction covers four years of nine months each. Fees: First year, $190; second and third years, $185 each. The total registration for 1906-7 was 24. No class has yet been graduated. No students beyond the third year will be admitted during 1907-8. The Dean is Dr. James J. Walsh. The third session begins Sept. 26, 1907, and ends June 10, 1908.

Syracuse.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.—This school was organized in 1872 as the Medical Department of Syracuse University. The faculty is composed of 14 professors and 42 lecturers, instructors, etc., in all 56. Clinical facilities are furnished by St. Joseph's Hospital, Hospital of the Good Shepherd, Syracuse Hospital for Women and Children, Onondaga County Orphan Asylum and the Syracuse Free Dispensary. The course covers four years of eight months each. The average total fees for each year are $167.25. The Dean is Dr. Gaylord P. Clark, 619 West Genessee St. Total number of students registered for 1906-7 was 153; graduates, 24. The next session opens Oct. 1, 1907, and closes June 10, 1908.

NORTH CAROLINA.

North Carolina, population 2,031,740, has four medical schools, one of which gives only the first two years of the medical course. The Medical Department of the University of North Carolina is located at Chapel Hill, population 1,100, and at Raleigh, population 13,934. The Leonard School of Medicine is at Raleigh. The North Carolina Medical College is at Charlotte, population 20,050. Wake Forest School of Medicine is at Wake Forest, population 823.

Chapel Hill and Raleigh.

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—This school was organized in 1891 and formerly gave only the work of the first two college years at Chapel Hill. In 1902 a department was established at Raleigh, in which the last two years are given. The faculty numbers 39. It is a member of the Association of American Medical Colleges. Total fees are $85 per year. Board, room, light and heat may be had for from $84 to $102 per college year. The President is Dr. F. P. Venable, Chapel Hill. The Dean of the Department at Raleigh is Dr. H. A. Royster. The number of students enroled in 1906-7 was 114; graduates, 10. The next session will begin Sept. 9, 1907, and end June 5, 1908.

Charlotte.

NORTH CAROLINA MEDICAL COLLEGE.—This school was organized in 1893 and has a faculty of 12 professors and 12 assistants, a total of 24. The Presbyterian Hospital in Charlotte supplies the clinical facilities. The course covers four years of eight months each. Fees: First three years, $85 each, and $100 for the fourth year. The Dean is Dr. Walter O. Nisbet. The total registration for 1906-7 was 69; graduates, 14. The next session begins Oct. 1, 1907, and closes May 1, 1908.

Raleigh.

LEONARD SCHOOL OF MEDICINE.—Colored. This department of Shaw University was established in 1882 by the American Baptist Home Mission Society. It has a faculty of 10. A hospital and dispensary supply clinical material. The course covers four years of seven months each. The total fees for each year are $75. The dormitory plan is adopted generally, and board and room cost $2 a week. The Dean is Dr. James McKee. Total enrolment for 1906-7 was 149; graduates, 24. Next session opens Oct. 1, 1907, and closes May 9, 1908.

Wake Forest.

WAKE FOREST SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty numbers 10. It only gives the first two years of the medical course, which is an election for the B.S. degree after 1908. Each annual course extends over nine months. The school is a member of the Association of American Medical Colleges. The fees are $100 a year. During 1906-7 the enrolment was 39. The Dean is Dr. Watson S. Rankin. The next session opens Sept. 5, 1907, and closes May 25, 1908.

NORTH DAKOTA.

North Dakota, population 383,226, has one medical college, the College of Medicine of the State University of North Dakota, which is situated at University. Only the first two years of the medical course are given, which may be elected as the last two years of the A.B. degree.

University.

UNIVERSITY OF NORTH DAKOTA COLLEGE OF MEDICINE.—This department was organized in 1905. The faculty is composed of 5 professors and 13 instructors, a total of 18. The course consists of two years' academic work and two years of medical college subjects, occupying nine months each year. The completion of this work in a satisfactory manner entitles the student to the A.B. degree from this institution, and a certificate of completion of the medical subjects embraced in the course. This school is a member of the Association of American Medical Colleges. The total fees for each of the medical subject years are $50. The Dean is M. A. Brannon. The enrolment during 1906-7 was 15. The third session begins Sept. 24, 1907, and closes June 18, 1908.

OHIO.

Ohio, population 4,400,155, has nine medical colleges. Four of these, the Medical College of Ohio, Eclectic Medical Institute, Miami Medical College and Pulte Medical College, are located in Cincinnati, a city of 332,934 inhabitants. Board can be procured in Cincinnati for from $3 to $5 per week. Cleveland, population 414,950, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. Board and lodging can be had for from $2.50 to $5 a week. Columbus, population 135,487, contains one medical college, the Starling-Ohio Medical College. Board and lodging cost from $2.50 to $5 per week. Toledo, with 145,901 people, has one medical school, the Toledo Medical College. Board and room can be had for from $3 to $5 a week.

Cincinnati.

MEDICAL COLLEGE OF OHIO.—This is the Medical Department of the University of Cincinnati, and was organized in 1819. It has a faculty of 28 professors and 33 lecturers and assistants, a total of 61. Good Samaritan Hospital, with 100 beds; Cincinnati Hospital, with 500 beds, and a college dispensary furnish clinical facilities. The course covers four years of eight months each. The lecture fees are $125 each year; matriculation fee of $5, payable but once, and a graduation fee of $25. Total registration of students for 1906-7 was 133; graduates, 35. The Secretary is Dr. Albert V. Phelps. The next session begins Oct. 1, 1907, and ends June 1, 1908.

MIAMI MEDICAL COLLEGE.—This school was organized in 1852 and has a faculty of 24 professors and 26 lecturers and demonstrators, a total of 50. The clinical facilities are furnished by the Cincinnati Hospital and a college dispensary. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. The total fees are, for the first year, $130; for the second and third, $125, and $150 for the fourth year. The Dean is Dr. J. C. Oliver, 628 Elm St. The total registration for 1906-7 was 75; graduates, 16. The next session opens Oct. 1, 1907, and closes June 1, 1908.

ECLECTIC MEDICAL INSTITUTE.—This school, organized in 1845, has a faculty of 17 professors and 12 lecturers and assistants, a total of 29. The Seton Hospital, Cincinnati Hospital and the Seton Hospital dispensary furnish clinical material. It is a member of the National Confederation of Eclectic Medical Colleges. The course covers four years of thirty-two weeks each. The fees are $90 for each year. The Dean is Dr. Rolla L. Thomas, 792 East McMillan St. Total enrolment 1906-7 was 97; graduates, 31. The next session begins Sept. 16, 1907, and closes April 29, 1908.

PULTE MEDICAL COLLEGE.—Homeopathic. This was organized in 1872 and has a teaching force of 20 professors and 14 assistants, 34 in all. Pulte Hospital, Cincinnati Hospital, Bethesda Hospital, Home of the Friendless and Foundlings and a college dispensary supply clinical material. The curriculum covers four years of seven months each. Fees: First year, $80; for the second and third, $75 each, and $100 for the fourth. The Dean is Dr. Charles E. Walton. Total enrolment for 1906-7 was 15; graduates, 5. The next session opens Oct. 2, 1907, and closes May 26, 1908.

Cleveland.

THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1863 as Charity Hospital Medical College, became the Medical Department of Wooster University in 1869 and the Medical Department of the Ohio Wesleyan University in 1896, when it assumed its present title. The faculty is composed of 31 professors, 30 lecturers, assistants, instructors, etc., 61 in all. Cleveland General Hospital, Cleveland City Hospital and a college dispensary supply clinical material. This school is a member of the Association of American Medical Colleges. The total annual fees are $130. The curriculum covers four years of eight months each. The Dean is Dr. R. E. Skeel, 314 The Osborn. Total enrolment for 1906-7 was 92; graduates, 13. The next term opens Oct. 1, 1907, and closes May 20, 1908.

WESTERN RESERVE UNIVERSITY MEDICAL COLLEGE.—The Medical Department was organized in 1843. Its faculty includes 21 professors, 49 lecturers, demonstrators and assistants, a total of 70. Clinical facilities are furnished by Lakeside Hospital, having 250 beds; St. Vincent's Hospital, having about 150 beds; City Hospital, with 250 beds; St. Alexis Hospital, with 250 beds, and the Home of Maternity, with the dispensary service at Lakeside and Charity hospitals, and a tuberculous dispensary at the college. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission to first year of medical course. The total fees are $125 for each year. The Dean is Dr. B. L. Millikin, 1110 Euclid Ave. Total enrolment for 1906-7 was 87; graduates, 10. The next session begins Oct. 1, 1907, and closes June 18, 1908.

CLEVELAND HOMEOPATHIC MEDICAL COLLEGE.—This school was founded in 1897 by a consolidation of Cleveland University of Medicine and Cleveland Medical College, the former of which was incorporated in 1850. The faculty includes 28 professors and 28 adjuncts, lecturers, etc., 56 in all. The clinical facilities are obtained from the Cleveland Homeopathic Hospital, the Cleveland City Hospital, the Cleveland Maternity Hospital, and a college dispensary. The course embraces four years of thirty weeks each. Fees, $125 per year. The Dean is Dr. George H. Quay. Total number of students registered 1906-7 was 43; graduates, 10. The next session opens Sept. 25, 1907, and closes May 15, 1908.

Columbus.

STARLING-OHIO MEDICAL COLLEGE.—This school began with the organization of Starling Medical College in 1847. The present name was adopted when the school merged with the Ohio Medical University, which was organized in 1890. The faculty consists of 33 professors and 26 lecturers, demonstrators, etc., a total of 59. Clinical material is furnished by the Protestant Hospital, Hawke's Hospital, State Hospital, St. Francis Hospital, Lawrence Hospital, St. Anthony's Hospital and college dispensaries. This college is a member of the Association of American Medical Colleges. The course covers four years of eight months each. Fees, $100 per year; matriculation fee, $5; graduation fee $10. The Dean is Dr. George M. Waters. Enrolment of the two schools for 1906-7 was 202; graduates 39. The next session begins Sept. 25, 1907, and ends May 20, 1908.

Toledo.

TOLEDO MEDICAL COLLEGE.—The school was organized in 1882, and in 1904 became the Medical Department of Toledo University. It has a faculty of 17 professors, 15 lecturers and assistants, in all 32. Toledo Hospital, St. Vincent's and Robinwood Hospitals, Lucas County Infirmary Hospital, Toledo Hospital for the Insane, and a free dispensary supply clinical facilities. The curriculum embraces four years of eight months each. The fees are $75 for each year, with a matriculation fee of $5, payable once. The Dean is Dr. Park L. Myers, 2730 Monroe St. Total enrolment for 1906-7 was 20; graduates, 8. The next session opens Oct. 1, 1907, and closes May 20, 1908.

OKLAHOMA.

Oklahoma, population 558,261, has two medical schools, the School of Medicine of the University of Oklahoma, which is located at Norman, a city of 2,225 inhabitants, and the College of Medicine of Epworth University, located at Oklahoma City, which has a population of 12,800.

Norman.

SCHOOL OF MEDICINE, UNIVERSITY OF OKLAHOMA.—This school was organized in 1903 and gives only the first two years of the medical course, each session extending over a period of nine months. Two courses are offered, one covering two years, at the completion of which a certificate is given; the other a combined course of four years, leading to the degree of B.S. Students are encouraged to take the latter course. The college has a faculty of 10, and is a member of the Association of American Medical Colleges. Total registration for 1906-7 was 13. The Acting Dean is Dr. R. P. Stoops. The next session begins Sept. 10, 1907, and ends June 11, 1908.

Oklahoma City.

COLLEGE OF MEDICINE EPWORTH UNIVERSITY.—This school was organized in 1904. The faculty consists of 22 professors and 3 assistants, instructors, etc., a total of 25. The Oklahoma City and St. Anthony's hospitals, Amie Rescue Home and a college dispensary furnish material for clinical instruction. The course of study covers four years of seven months each. The total fees are about $70 each year. The Dean is Dr. A. K. West. The registration for 1906-7 was 16; graduates, 1. The fourth session begins Oct. 2, 1907, and ends May 10, 1908.

OREGON.

Oregon, population 461,451, has two medical colleges: Medical Department Willamette University, located in Salem, a city of 4,258 people, and University of Oregon Medical Department, in Portland, a city of 98,655 population. Board and lodging may be obtained in Salem for from $3 to $5 per week and in Portland for from $4 to $6.

Portland.

UNIVERSITY OF OREGON MEDICAL DEPARTMENT.—This department of the State University was organized in 1887, and has a faculty of 14 professors and 22 assistants, lecturers, etc., a total of 36. Good Samaritan and St. Vincent's hospitals, containing 200 and 350 beds, respectively, and Multomah County Hospital furnish good material for clinical study. Out-patient clinics are held at Pilgrim Chapel. This school is a member of the Association of American Medical Colleges. The course is four years of seven and one-half months each. Fees: First year, $142.50; second, $137.50; third, $107.50, and for the fourth, $57.50. The Dean is Dr. Simeon E. Joseph. The total number of students for 1906-7 was 86; graduates, 20. The next session opens Sept. 16, 1907, and closes May 1, 1908.

Salem.

MEDICAL DEPARTMENT WILLAMETTE UNIVERSITY.—The school was organized in 1864. The faculty consists of 16 professors and 3 assistants, a total of 19. Clinical facilities for study are supplied by Salem Hospital and a college dispensary. This school is a member of the Association of American Medical Colleges. The course embraces four years' work of seven months each. Fees: First and second years, $110 each; third, $75, and $50 for the fourth year. The Dean is Dr. W. H. Byrd. Total enrolment for 1906-7 was 45; graduates, 16. The next session begins Sept 15, 1907, and ends May 1, 1908.

PENNSYLVANIA.

Pennsylvania, population 6,824,115, has seven medical colleges. Of these Philadelphia, having a population of 1,367,716, contains six, as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple College Department of Medicine. Board and lodging cost from $4 a week upward. The other school, Western Pennsylvania Medical College, is situated in Pittsburg, a city of 345,043 people. The cost of board and lodging is from $4 to $6 a week.

Philadelphia.

UNIVERSITY OF PENNSYLVANIA DEPARTMENT OF MEDICINE.—This is the first medical college established in this country, having been organized in 1765 as the Medical Department of the College of Philadelphia; the first degree was granted in 1768. When from the College of Philadelphia the University of Pennsylvania was organized in 1791, it became the Medical Department of the University, its present relation. The faculty is made up of 27 professors, 2 associate professors, 4 adjunct professors, 7 assistant professors, 112 demonstrators, lecturers, associates, instructors, etc., a total of 152. Clinical material is furnished by the University Hospital, capacity 300 beds, which treats over 14,000 cases annually; University Maternity Pavilion, with 50 beds; Philadelphia Hospital, containing 1,000 beds; Pennsylvania Hospital, Children's Hospital and the Southeastern Hospital and Dispensary. The requirements for admission will be increased, beginning with the session of 1908-9, to the equivalent of one year's work in a college of arts. The course embraces study for four years of nine months each. The total fees for each year are $200, with a matriculation fee of $5 for the first year. The Dean is Dr. Charles H. Frazier. Total enrolment for 1906-7 was 588; graduates, 114. The next session opens Sept. 27, 1907, and closes June 17, 1908.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1825, and has a faculty of 30 professors and 94 lecturers, demonstrators, etc., a total of 124. Jefferson Hospital, together with its maternity department, are used exclusively by students of the school for clinical study. A new fireproof hospital, having 300 beds, with provision for a large dispensary, is now in use. The following hospitals are also open for study of clinical cases: Pennsylvania, Philadelphia, St. Joseph's, German, Municipal and Wills Eye hospitals. The course of study covers graded work of four years of eight months each. The tuition is $180 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland. The total number of students for 1906-7 was 629; graduates, 126. The next session opens Sept. 24, 1906, and closes June 8, 1908.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1881, and has a faculty made up of 29 professors and 59 assistants, lecturers, etc., 88 in all. Opportunities for clinical study are offered by the Medico-Chirurgical Hospital, with 125 beds, and its children's and maternity hospital, having 30 beds. In common with other schools, the following are used: Philadelphia, Pennsylvania, German, Samaritan, St. Joseph's, St. Agnes', St. Mary's, Methodist, Jewish and the Philadelphia Lying-in hospitals. The work embraces four years of eight months each. Fees: $150 per annum; matriculation, $5, payable once. The Dean is Dr. Seneca Egbert. Total enrolment 1906-7 was 434; graduates, 75. The next session opens Sept. 23, 1907, and will close June 6, 1908.

WOMAN'S MEDICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1850, and has a faculty of 10 professors and 37 assistants, lecturers, etc., in all 47. Clinical facilities are offered by the Hospital of the Woman's Medical College of Pennsylvania, Woman's Hospital, West Philadelphia Hospital for Women, German, Jewish, Children's and Philadelphia hospitals, Presbyterian Hospital, Wills Hospital for Diseases of the Eye, the Howard Hospital and the Philadelphia Lying-in Charity. The curriculum covers four years of eight months each. Fees: $140 each year. The Dean is Dr. Clara Marshall. Total enrolment for 1906-7 was 152: graduates, 29. The next session begins Sept. 25, 1907, and will end May 20, 1908.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This was organized in 1848 and has a faculty of 27 professors and 51 lecturers, instructors, etc., in all 78. Hahnemann College Hospital furnishes material for clinical work. The work covers four years of eight months each. Fees: For each year, $150; matriculation, $5. Total number of students for 1906-7 was 188; graduates, 48. The Dean is Dr. Herbert L. Northrop. The sixtieth session begins Sept. 25, 1907, and will end May 24, 1908.

MEDICAL DEPARTMENT OF THE TEMPLE COLLEGE.—This school was organized in 1901. It has a faculty of 19 professors and 40 instructors and assistants, a total of 59. Beginning in September, 1907, there will be a four-year day course and a five-year evening and day course. Three years of evening work will be required to cover the work of the two first years of the day course. All junior and senior work must be done in day classes. The fees are $150 per year. The total enrolment for 1906-7 was 90; graduates, 16. The Dean is Dr. I. Newton Snively. The next session begins Sept. 16, 1907, and ends June 16, 1908.

Pittsburg.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.—This is the Medical Department of the Western University of Pennsylvania, and was organized in 1886. The faculty is composed of 47 professors and 57 associates, assistants, etc., 104 in all. Clinical material for study is furnished by a college dispensary, and the Emma Kaufman Clinic, Reineman Maternity Hospital, Mercy, South Side, Passavant and St. John's hospitals. The course of study embraces four years of nine months each. The total fees are $150 for each year. The Dean is Dr. J. C. Lange. Total enrolment for 1906-7 was 346; graduates, 48. The next session begins Oct. 1, 1907, and will close June 12, 1908.

PHILIPPINE ISLANDS.

Manila.

UNIVERSITY OF SAINT THOMAS MEDICAL DEPARTMENT.—The University was founded by a papal decree in 1587, and the medical school was added in 1871. The faculty consists of 19 professors. The course extends over a period of six years of nine months each. The first year is a preparatory one, devoted to the teaching of physics, chemistry and biology. The degree of licenciado is conferred at the conclusion of the fifth year, and the degree of doctorado at the end of the sixth year, during which only special work is done. This last year is optional, the degree of licenciado entitling the holder to all the rights and privileges of the medical practitioner. The degree is equivalent to the English M.B. The Rector of the university is Dr. Fr. Raymundo Vetasquez; the Secretary of the Medical Department is Lic. Blas C. Alcuaz.

PHILIPPINE MEDICAL COLLEGE.—This school has just been organized under the support of the Philippine Commission, which appropriated $62,500 for the first session, which begins this fall. The requirement for admission will conform to the standards in the United States and Great Britain. The Secretary is Dr. Harry T. Marshall.

SOUTH CAROLINA.

South Carolina, population 1,434,901, has one medical college, situated in Charleston, a city of 56,062 people. Board and room can be obtained for from $12 to $16 a month.

Charleston.

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.—This school was founded in 1823. The faculty is made up of 10 professors and 12 assistants, etc., 22 in all. Clinical facilities are offered by the New Roper Hospital, capacity 150 beds. The course covers four years of seven months each. The total fees for each of the first two years are $100, and $75 each for the last two. The Dean is Dr. Edward F. Parker. Total enrolment for 1906-7 was 130; graduates, 21. The next session opens Oct. 1, 1907, and closes May 1, 1908.

TENNESSEE.

Tennessee, population 2,147,166, has eleven medical colleges. Of these Vanderbilt University Medical Department, the Medical Department of the University of Nashville, University of Tennessee Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 80,865. Board and lodging cost from $3 to $4 a week. Knoxville, population 34,344, contains two colleges, Tennessee Medical College and Knoxville Medical College. The cost of room and board in that city is from $2.50 to $4 a week. Chattanooga Medical College is situated in Chattanooga, a city of 30,469 people. Board and lodging cost there from $2 a week upward. Memphis Hospital Medical College, the College of Physicians and Surgeons and the University of West Tennessee are located in Memphis, population 113,669, where good board can be obtained for from $3 to $4 a week. The other school, the Sewanee Medical College, is located at Sewanee, a town of 500.

Chattanooga.

CHATTANOOGA MEDICAL COLLEGE.—This is the Medical Department of Grant University and was organized in 1889. The faculty consists of 10 professors and 16 instructors, demonstrators, etc., total 26. Clinical facilities are afforded by Baroness Erlanger Hospital, a county asylum, and a dispensary. This school is a member of the Southern Medical College Association. The course covers four years of seven months each. The total fees approximate $55 each session. The Dean is Dr. J. R. Rathmell. The enrolment for 1906-7 was 249; graduates, 36. The next session opens about Oct. 1, 1906, and ends April 30, 1907.

Knoxville.

TENNESSEE MEDICAL COLLEGE.—This school was organized in 1889 and is now the Medical Department of the Lincoln Memorial University. It has a faculty of 14 professors and 12 assistants, a total of 26. The Lincoln Memorial Hospital, owned and controlled by the faculty, furnishes material for clinical study. This school is a member of the Southern Medical College Association. The curriculum covers four years of seven months each. Fees: First and second years, $50; third and fourth years, $60; matriculation fee, $5; graduation fee, $25. The Registrar is Dr. E. R. Zemp. Total number of students for 1906-7 was 80; graduates, 16. Next session begins Nov. 1, 1907, and closes about June 1, 1908.

KNOXVILLE MEDICAL COLLEGE.—Colored. This school was established in 1900. The teaching force comprises 13. The course covers four years of seven months each. Fees, $40 per year. The Secretary is Dr. H. M. Green. Total number of students for 1906-7 was 32; graduate, 1. The next session opens Nov. 4, 1907, and closes June 6, 1908.

Memphis.

MEMPHIS HOSPITAL MEDICAL COLLEGE.—This school, organized in 1878, has a faculty of 11 professors and 26 assistants, besides quiz masters. Clinical facilities are furnished by the City Hospital, Presbyterian Hospital, St. Joseph's Hospital and the East End Dispensary. This school is a member of the Southern Medical College Association. The course covers four years of seven months each. The total fees for the first three years are $75; for the fourth, $100. The Dean is Dr. W. R. Rogers. Total registration for 1906-7 was 388; graduates, 66. The twenty-eighth annual session will begin Oct. 1, 1907, and close April 30, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1906 and has a faculty of 20. The Memphis City Hospital furnishes clinical material. Access will also be had to St. Joseph's Presbyterian and Lucy Brinkley hospitals. The course covers four years of seven months each. The enrolment for 1906-7 was 64; graduates, 22. The Dean is Dr. Heber Jones, Tennessee Trust Building. The next session begins Oct. 1, 1907, and ends April 1, 1908.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF WEST TENNESSEE.—Colored. This school, organized in 1900, has a faculty of 10. The course is four years of seven months each. Clinical facilities are furnished by the Houston Hospital and a dispensary. The fees are $40 per year; graduation, $10 extra. Registration for 1906-7 was 28; graduates, 3. The President is Dr. M. V. Lynk. The next session opens Sept. 16, 1907, and closes April 18, 1908.

Nashville.

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874, and in 1895, when the present medical building was completed, the course was extended, the standard raised

The present faculty of 35 consists of 20 professors and 15 lecturers. The school is a member of the Association of American Medical Colleges. The course covers four years of seven and a half months each. The minimum entrance requirement is a high school diploma or its equivalent. The total fees are $125 each year. The Dean is Dr. William L. Dudley. Total enrolment for 1906-7 was 215; graduates, 42. The next session begins on or about Sept. 18, 1907, and ends May 1, 1908.

UNIVERSITY OF NASHVILLE MEDICAL DEPARTMENT.—This school established in 1850, has a faculty of 10 professors and 15 lecturers, assistants, etc., in all 25. This school is a member of the Southern Medical College Association. The course of study covers four years of seven and a half months each. The tuition for each of the four years is $75. The Dean is Dr. William G. Ewing. Total enrolment for 1906-7 was 414; graduates, 86. The next session begins Oct. 1, 1907, and ends April 30, 1908.

UNIVERSITY OF TENNESSEE MEDICAL DEPARTMENT.—This school was organized in 1876 as the Nashville Medical College; its present relations were assumed in 1879. The faculty is composed of 13 professors and 18 lecturers, assistants, etc., 31 in all. The school is a member of the Southern Medical College Association. The course covers four years of seven months each. The total fees for each of the first three years are $100 and $125 for the fourth year. The Dean is Dr. Paul F. Eve, 614 Broad St. Total enrolment for 1906-7 was 167 students; graduates, 41. The next session begins Sept. 16, 1907, and ends May 1, 1908.

MEHARRY MEDICAL COLLEGE.—Colored. This school was organized in 1876 as the Medical Department of Central Tennessee College, now Walden University. This school is a member of the Association of American Medical Colleges. The faculty is made up of 12 professors and 13 instructors, demonstrators, etc., 25 in all. The work embraces four years of seven months each. The total fees are for the first year, $52; second and third years, $55 each, and $60 for the fourth year. The Dean is Dr. G. W. Hubbard. Total registration for 1906-7 was 300; graduates, 73. The next session begins Sept. 4, 1907, and ends April 3, 1908.

Sewanee.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE SOUTH.—This school was organized in 1892 and has a faculty of 21 members. It is a member of the Southern Medical College Association. The curriculum covers four years of seven months each. The Dean is Dr. J. S. Cain. Total enrolment for 1906-7 was 150; graduates, 39. The fifteenth course opened April 1, 1906-7, and closes Nov. 1, 1907.

TEXAS.

Texas, population 3,455,300, has seven medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 37,789 inhabitants. Good board and room can be procured for from $15 to $20 a month. The Medical Department of Fort Worth University is at Fort Worth, population of 27,192. The cost of board and room in that city is from $12 to $15 a month. The Baylor University College of Medicine, the Medical Department of Southwestern University, the College of Physicians and Surgeons and the Physio-Medical College of Texas are situated in Dallas, population 44,159. The Gate City Medical College is situated in Texarkana, having a population of 5,256.

Dallas.

BAYLOR UNIVERSITY COLLEGE OF MEDICINE.—This is a new name for the University of Dallas Medical Department, which was organized in 1907. In June, 1903, it became the Medical Department of Baylor University at Waco. In 1905 it merged with the Dallas Medical College. The faculty numbers 20 professors and 16 assistants, total 36. Parland Hospital, with 90 beds; St. Paul's Sanitarium, Baptist Memorial Hospital and a college dispensary and hospital furnish clinical material. The course covers four years of seven months each. The school is a member of the Southern Medical College Association. The fees are $75 for each of the four years, with a matriculation fee of $5, paid once, and a graduation fee of $25. The Dean is Dr. E. H. Cary. Total registration for 1906-7 was 57; graduates, 6. The seventh session opens Oct. 1, 1907, and ends May 1, 1908.

SOUTHWESTERN UNIVERSITY MEDICAL COLLEGE.—This is the Medical Department of Southwestern University and was organized in June, 1903. It has a faculty of 15 professors and 15 instructors, total 30. The course of instruction covers four years. This school is a member of the Southern Medical College Association. The fees are: Matriculation, $5, paid once; annual tuition, $75; graduation, $25. The hospitals open for clinical teaching are St. Paul's Sanitarium, City Hospital, Texas Baptist Memorial Hospital, Children's Home, Mission Home, Woman's Home, St. Joseph Orphanage, St. Matthew's Home for Children, Dr. H. K. Leake's Private Infirmary and Outdoor Clinic of the Settlement Home. The Dean is Dr. John O. McReynolds. Total registration, 1906-7, was 68; graduates, 9. The fifth session opens Oct. 2, 1907, and closes May 1, 1908.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was founded in 1904 as the Bell Medical College, and in 1905 the name was changed to the above. It has a total teaching staff of 15. The course extends over four years of six months each. The fees for the first three years are $80, and $105 for the fourth year. The Dean is Dr. Arthur C. Bell. Total registration for 1906-7 was 103; graduates, 23. The next session begins Oct. 2, 1907, and closes April 25, 1908.

PHYSIO-MEDICAL COLLEGE OF TEXAS.—This college was organized in 1902. It has a faculty of 21 professors and 4 assistants, total 25. The course is four years of thirty weeks each. The fees are, first year, $70; fourth year, $85; other years, $65. Enrolment, 1906-7, was 44; graduates, 2. The Secretary is Dr. R. L. Spann. The next session opens Oct. 8, 1907, and closes May 16, 1908.

Fort Worth.

MEDICAL DEPARTMENT OF FORT WORTH UNIVERSITY.—This school was organized in 1894 and has a faculty of 15 professors and 22 lecturers, assistants, etc., in all 37. Clinical facilities are supplied by St. Joseph's Hospital, with 200 beds; the Benevolent Home, containing 75 beds; the Delia Collins' Rescue Home, having 50 beds, and a college dispensary. The school is a member of the Southern Medical College Association. The course covers four years of seven months each. The total fees for each of the first three years are $75 and $100 for the fourth year. The Dean is Dr. Frank Gray. The total enrolment for 1906-7 was 176; graduates, 19. The next session opens Oct. 3, 1907, and closes May 3, 1908.

Galveston.

UNIVERSITY OF TEXAS MEDICAL DEPARTMENT.—This department of the State University was organized in 1891 and has a faculty of 22. The John Sealy Hospital and St. Mary's Infirmary supply material for clinical study. Requirements for admission: Graduates of approved schools and colleges, graduates of affiliated high schools, holders of first-grade state teachers' certificates and students of approved colleges and universities are admitted without entrance examination. Others must pass examinations on the following prescribed subjects: English, 3½ units; history, 1½ units; algebra, 1½ units; 1½ units in either geometry, Latin or physics, and 5 additional units from elective subjects, or 6 units if Latin be included. (A unit is a high school course pursued for one session.) The curriculum embraces four years of eight months each. Fees: First year, $50; second and third, each $20, and $5 for the fourth. The Dean is Dr. William S. Carter. Total registration for 1906-7 was 188; graduates, 27. The seventeenth session begins Oct. 1, 1907, and ends May 30, 1908.

Texarkana.

GATE CITY MEDICAL COLLEGE.—Organized in 1904. The length of each course is seven months. The Faculty numbers 20 professors and assistants. Registration, 1906-7, was 209; graduates, 54. The Dean is Dr. J. W. Decker. The next session begins Oct. 1, 1907, and ends May 4, 1908.

UTAH.

Utah, population 309,734, has one medical college, situated at Salt Lake City, which has 57,138 people. This college is the Medical Department of the University of Utah, which gives only the first two years of the medical course.

Salt Lake City.

UNIVERSITY OF UTAH DEPARTMENT OF MEDICINE.—The department was organized in 1906 and offers the first two years of the medical course, each year extending over thirty-six weeks. The medical faculty consists of 7 professors and 16 lecturers and assistants, a total of 23. Fees: First year, total $62.50; second year, $68.75. The Dean is Ralph V. Chamberlain, Ph. D. The enrolment for 1906-7 was 46. The third session begins Sept. 12, 1907, and ends June 8, 1908.

VERMONT.

Vermont, population 349,251, has one medical school, located at Burlington, a town of 19,885 people. Board and room cost from $3.50 to $5 a week.

Burlington.

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE.—This school was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 31 professors and 15 assistants, instructors, etc., in all 46. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. The course of study covers four years of seven months each. The total fees for each of the first three years are $115 and $140 for the fourth year. The Dean is Dr. H. C. Tinkham; Secretary, H. L. White, A.M. Total registration of students for 1906-7 was 165; graduates, 34. The fifty-fifth session begins Nov. 14, 1906, and ends June 24, 1908.

VIRGINIA.

Virginia, population 1,953,284, has three medical colleges, one, the Medical Department of the University of Virginia, situated in Charlottesville, population 6,449, and two, the Medical College of Virginia and the University College of Medicine, in Richmond, population 86,148. Board and room can be obtained for $18 a month and upward in Charlottesville, and from $12 to $20 a month in Richmond.

Charlottesville.

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—This school was organized in 1827, and has a faculty of 25. The course is four years of nine months each. The requirements for admission are the completion of a three years' high school course or its equivalent, and a year of chemistry, physics, and biology. A free dispensary and a new hospital with a capacity of 110 beds furnish the clinical facilities. Fees: First year, $150; second year, $140; third year, $120; fourth year, $100. The Dean is Dr. R. H. Whitehead. Total enrolment for 1906-7 was 134; graduates, 31. The next session opens Sept. 12, 1907, and closes June 12, 1908.

Richmond.

MEDICAL COLLEGE OF VIRGINIA.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, Virginia. In 1858 it took its present name. In 1860 the college

became a state institution. Clinical material is furnished by the Memorial Hospital and the City Free Dispensary. The State Penitentiary Hospital and other public charities and asylums of the city afford additional clinical material. This school is a member of the Southern Medical College Association. The course embraces four years of eight months each. Fees: $100 each year; graduation fee, $30. The Dean is Dr. Christopher Tompkins. Total registration for 1906-7 was 212; graduates, 29. The next session begins Sept. 24, 1907, and ends May 20, 1908.

UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1893 and has a faculty of 19 professors, 43 lecturers, assistants, etc., a total of 62. Clinical facilities are furnished by Virginia Hospital, Richmond Eye, Ear and Throat Infirmary, containing 34 beds; the City Hospital, City Jail, State Penitentiary and a college dispensary. This school is a member of the Association of American Medical Colleges. The curriculum covers four years of eight months each. The total fees are $100 for each year. The President is Dr. Stuart McGuire; the Dean is Dr. Paulus A. Irving. Total enrolment for 1906-7 was 182; graduates, 43. The next session begins Sept. 18, 1907, and ends May 19, 1908.

WEST VIRGINIA.

West Virginia, population 1,056,805, has one medical college, College of Medicine of the West Virginia University, located at Morgantown, a city of 1,900 inhabitants.

Morgantown.

WEST VIRGINIA UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1902 and gives only the first two years of the medical course. Each college term extends over nine months. The faculty consists of 6 professors and 5 assistants, 11 in all. The school is a member of the Association of American Medical Colleges. Tuition to students residing in the state, $25; for others, $50 per year. The Dean is Dr. J. N. Simpson. Total registration in 1906-7 was 45. The next session begins Sept. 16, 1907, and closes June 18, 1908.

WISCONSIN.

Wisconsin, population 2,069,042, has three medical colleges, the Medical Department of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city having a population of 20,886, and the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons, situated in Milwaukee, a city of 312,736 people. Clinical facilities are furnished them in common by the County Hospital, with 300 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

Madison.

UNIVERSITY OF WISCONSIN, COLLEGE OF MEDICINE.—This department of the University of Wisconsin was authorized at the recent session of the State Legislature. The work will be limited to the first two years of the medical course. For matriculation a candidate must have had in addition to a four year high school course at least two years in a college of arts and science or an equivalent training. Two years of Latin, a reading knowledge of French and German, and at least a year's work in physics, chemistry and biology are specifically required. The college will be open for the matriculation of students Sept. 25-26, 1907. The college year runs to June 8, 1908. For further information address the Registrar, University of Wisconsin.

Milwaukee.

MILWAUKEE MEDICAL COLLEGE, MEDICAL DEPARTMENT OF MARQUETTE UNIVERSITY.—This school was organized in 1893 and has a faculty of 36 professors and 29 lecturers, instructors, etc., a total of 65. Clinical material is furnished by Trinity and the County Hospitals, Milwaukee Hospital for the Insane and a college dispensary. The school is a member of the Association of American Medical Colleges. The course covers four years of eight months each. The total fees are $125 each for the first three years and $135 for the fourth year. The Dean is Dr. William H. Earles. Total number of students for 1906-7 was 130; graduates, 27. The fourteenth session begins Sept. 17, 1907, and closes May 20, 1908.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1893 and has a faculty composed of 20 professors and 26 associates, assistants, etc., a total of 46. St. Joseph's Hospital, containing 150 beds; the college dispensary, the Milwaukee County Hospital and the Hospital for the Insane supply clinical material. The school is a member of the Association of American Medical Colleges. The curriculum includes four years of eight months each. Fees: Matriculation, paid once, $5; general ticket, $100; for the use of the microscope a fee of $2 is charged for each course. The Secretary is Dr. W. H. Washburn. Total enrolment for 1906-7 was 62; graduates, 21. The next session begins Sept. 24, 1907, and ends May 27, 1908.

THE AMERICAN MEDICAL ASSOCIATION STANDARD OF MEDICAL EDUCATION.

THE IDEAL STANDARD.

The ideal standard to be aimed at from the present viewpoint should consist of: (A) Preliminary education sufficient to enable the candidate to enter our recognized universities, such qualifications to be passed on by the state authorities. (B) A five-year medical course, the first year of which should be devoted to physics, chemistry and biology, and such arrangements should be made that this year could be taken either in a school of liberal arts or in the medical school. Of the four years in pure medical work, the first two should be spent in laboratories of anatomy, physiology, pathology, pharmacology, etc., and the last two in close contact with patients in dispensaries and hospitals in the study of medicine, surgery, obstetrics, and the specialties. (C) A sixth year as an interne in a hospital or dispensary should then complete the medical course.

Under such a scheme the majority of men would begin the study of medicine between 18 and 19 years of age, and would graduate from the hospital interneship at from 24 to 25. A college education is recognized as a desirable preparation for a limited number of men, but it is thought that it is not and never will be desirable to make such college education a requirement to the study of medicine, as it would make the age of graduation from 27 to 28 years, which is regarded as too old a period at which the young medical man should begin his life's work. It is obvious that this very desirable scheme of requirements can not be at once demanded or recommended.

STANDARD NOW RECOMMENDED.

The minimum standard now recommended prerequisite to the practice of medicine is as follows:

1. (a) The preliminary requirement to be a four-year high school education or its equivalent, such as would admit the student to one of our recognized universities; (b) and in addition (as soon as conditions warrant), a year of not less than nine months, devoted to the study of physics, chemistry, biology and one modern language, preferably German, to be taken either in a college of liberal arts or in a recognized medical college having a preliminary year devoted exclusively to the subjects mentioned.

2. There should be a requirement that previous to matriculation in a medical college every student must secure from the State Examining Board a "medical student's entrance certificate," which would be issued either on presentation of credentials of preliminary education not less than that laid down by requirement one, or on passing an examination given by the Board and which will satisfy the Board that the student has an equivalent education.

3. A medical training in a medical college, having four years of not less than thirty weeks each year, exclusive of holidays, of thirty hours per week of actual work.

4. Graduation from an approved medical college required to entitle the candidate to an examination before a state examining board.

5. The passing of a satisfactory examination before a state examining board.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The requirements for admission to and graduation from colleges holding membership in force until April 10, 1905, were as follows:

SECTION 1.—Each college holding membership in this Association shall require of each student, before admission to its course of study, an examination, the minimum of which shall be as follows:

1. In English, a composition on some subject of general interest. This composition must be written by the student at the time of the examination, and should contain at least 200 words. It should be criticised in relation to thought, construction, punctuation, spelling and handwriting.

2. In Arithmetic, such questions as will show a thorough knowledge of common and decimal fractions, compound numbers, and ratio and proportion.

3. In Algebra, such questions as will bring out the student's knowledge of the fundamental operations, factoring, and simple quadratic equations.

4. In Physics, such questions as will discover the student's understanding of the elements of mechanics, hydrostatics, hydraulics, optics and acoustics.

5. In Latin, an examination on such elementary work as the student may offer, showing a familiarity usually attained by one year of study; for example, the reading of the first 15 chapters of Cæsar's Commentaries, and the translation into Latin of easy English sentences involving the same vocabulary.

SEC. 2.—In place of this examination, or any part of it, colleges, members of this Association, are at liberty to recognize the official certificates of reputable literary and scientific colleges, academies, high schools, and normal schools, and also the medical student's certificate issued by any state examining board covering the work of the foregoing entrance examination.

SEC. 3.—Colleges, members of this Association, may allow students who fail in one or more branches in this entrance examination the privilege of entering the first-year course, but such students shall not be allowed to begin the second course until the entrance requirements are satisfied.

SEC. 4.—Colleges, members of this Association, are free to honor official credentials issued by medical colleges of equal requirements, except in the branches of study embraced in the last year of their own curriculum.

(*Continued on page 592.*)

NAME AND LOCATION OF COLLEGE.	Population of city in which college is located. (Census Bureau est. 1903.)	Number of students registered, session of 1906-7.		Graduates 1907.		Total number of teachers.	Weeks in college year.	Total students in all colleges in state, 1906-7.	Total graduates all colleges in state, 1907.
		Men.	Women	Men.	Women				
ALABAMA								283	40
Birmingham Medical College., Birmingham—R.	42,087	113	...	12	...	34	24	...	...
Medical College of Alabama, Mobile.—R.	40,686	170	...	28	...	23	28	...	...
ARKANSAS								269	37
Arkansas University, Little Rock.—R.	42,036	180	2	25	1	43	28	...	...
College of Physicians and Surgeons.—R.	42,036	87	...	11	...	39	28	...	...
CALIFORNIA								416	102
Cooper Med. Coll., San Francisco.—R.	855,919	103	9	24	5	61*	36	...	...
University of California, San Francisco.—R.	855,919	46	8	20	4	58	36	...	...
Hahnemann Medical College, San Francisco.—H.	855,919	23	5	2	0	32	32	...	...
College of P. and S., San Francisco.—R.	855,919	70	9	15	1	40	32	...	...
Oakland Coll. of Med. and Surg., Oakland.—R.	70,386	8	2	1	1	30	36	...	...
University of Southern California, Los Angeles.—R.	116,420	84	15	21	6	55	33	...	...
College of P. and S., Los Angeles.—R.	116,420	29	5	2	0	39	36	...	...
COLORADO								201	47
Denver and Gross Coll. of Med., Denver.—R.	144,588	93	8	26	3	70	33	...	...
Westminster University College of Medicine.—P.	144,588	29	13	5	1	37	29	...	...
Colorado School of Medicine, Boulder.—R.	6,150	58	...	12	...	37	35	...	...
CONNECTICUT.								153	29
Yale University Medical Department, New Haven.—R.	114,600	153	...	29	...	56	36	...	...
DISTRICT OF COLUMBIA								483	119
George Washington University, Washington.—R.	293,217	215	...	63	...	81	33	...	...
Georgetown University, Washington.—R.	293,217	82	...	12	...	54	33	...	...
Howard University Medical Department, Washington.—R.	293,217	178	8	40	4	35	32	...	...
GEORGIA								619	90
Atlanta College of P. and S., Atlanta.—R.	96,550	200	...	37	...	41	28	...	...
Atlanta School of Medicine, Atlanta.—R.	96,550	233	...	20	...	35	29	...	...
Georgia Coll. of Eclectic Med. and Surg., Atlanta.—E.	96,550	76	...	12	...	...	...	...	...
International Medical Missionary College.—R.	96,550	12	...	1	...	10	...	...	...
University of Georgia, Augusta.—R.	41,283	98	...	20	...	30	28	...	...
ILLINOIS								2,996	608
American Medical Missionary College, Chicago.—R.	1,873,880	28	18	4	6	28	35	...	...
Bennett Coll. of Eclectic Med. and Surg., Chicago.—E.	1,873,880	133	20	30	4	51	31	...	...
College of Medicine and Surgery, Chicago.—Ph.M.	1,873,880	16	12	1	1	37	30	...	...
College of Physicians and Surgeons, Chicago.—R.	1,873,880	463	38	136	10	155	33	...	...
Hahnemann Medical College, Chicago.—H.	1,873,880	118	18	31	11	86	31	...	...
Hering Medical College, Chicago.—H.	1,873,880	72	8	9	2	52	32	...	...
Illinois Medical College, Chicago.—R.	1,873,880	208	4	38	2	50	30	...	...
Jenner Medical College, Chicago.—R*	1,873,880	177	8	17	2	53	38	...	...
Northwestern University, Chicago.—R.	1,873,880	473	...	134	...	121	34	...	...
Rush Medical College, Chicago.—R.	1,873,880	533	34	82	1	238	34	...	...
National Medical University, Chicago.—P.	1,873,880	230	20	24	2	35	36	...	...
Chicago College of Medicine and Surgery, Chicago.—R.	1,873,880	225	14	33	2	74	32	...	...
Dearborn Medical College, Chicago.—R*	1,873,880	119	7	23	3	45	39	...	...
INDIANA								373	105
Indiana Medical College, Indianapolis.—R.	191,033	221	6	66	4	111	34	...	...
Physio-Med. Coll. of Indiana, Indianapolis.—Ph. M.	191,033	23	2	7	...	47	32	...	...
Eclectic Med. Coll. of Indiana, Indianapolis.—E.	191,033	12	...	2	...	...	28	...	...
Indiana Univ. Sch. of Med. and the State Coll. of P. & S.—R.	191,033	105	4	25	0	45	33	...	...
IOWA								548	113
Drake University College of Medicine, Des Moines.—R.	65,754	67	9	16	1	51	35	...	...
Keokuk Medical College of Phys. and Surg., Keokuk—R.	14,803	120	7	27	3	25	31	...	...
Sioux City College of Medicine, Sioux City.—R.	31,701	25	4	9	1	26	34	...	...
State University of Iowa, Homeo. Dept., Iowa City.—H.	7,987	44	0	4	0	19	34	...	...
State University of Iowa, Medical Dept., Iowa City.—R.	7,987	257	15	47	5	27	34	...	...
KANSAS								233	52
Kansas Medical College, Topeka.—R.	35,388	79	3	13	1	42	31	...	...
School of Medicine, Univ. of Kansas, Kansas City.—R.	55,348	112	3	29	...	70	35	...	...
Eclectic Medical University, Kansas City—E.	55,348	32	4	7	2	49	28	...	...
KENTUCKY								1,223	385
Hospital College of Medicine, Louisville.—R.	215,945	256	...	94	...	51	28	...	...
Kentucky School of Medicine, Louisville.—R.	215,945	270	...	66	...	47	28	...	...
Louisville Medical College, Louisville.—R.	215,945	180	...	53	...	30	30	...	...
Louisville National Medical College, Louisville.—R.	215,945	48	2	12	1	24	30	...	...
Southwestern Homeopathic Med. Coll., Louisville.—H.	215,945	11	...	1	...	27	28	...	...
University of Louisville, Louisville.—R.	215,945	456	...	158	...	34	30	...	...
LOUISIANA								567	100
Flint Medical College, New Orleans.—R.	300,625	50	1	8	1	16	32	...	...
Tulane University, New Orleans.—R.	300,625	516	...	91	...	61	28	...	...
MAINE								94	16
Medical School of Maine, Portland.—R.	52,656	94	...	16	...	34	32	...	...
MARYLAND								1,562	355
Baltimore Medical College, Baltimore.—R.	513,313	481	...	97	...	67	32	...	...
Baltimore University School of Medicine, Baltimore.—R.	513,313	23	...	5	...	24	34	...	...
College of Phys. and Surg., Baltimore.—R.	513,313	302	...	75	...	51	32	...	...
Johns Hopkins University, Baltimore.—R.	513,313	252	12	66	4	95	33	...	...
Atlantic Medical College, Baltimore.—H.	513,313	17	5	9	2	87	32	...	...
University of Maryland, Baltimore.—R.	513,313	311	...	62	...	63	32	...	...
Woman's Medical College, Baltimore.—R.	513,313	...	34	...	6	84	32	...	...
Maryland Medical College, Baltimore.—R.	513,313	125	...	29	...	41	32	...	...
MASSACHUSETTS								961	160
Boston University School of Medicine, Boston.—H.	594,618	68	28	8	5	52	32	...	...
College of Physicians and Surgeons, Boston.—R.	594,618	112	11	24	2	45	35	...	...
Harvard University Medical School, Boston.—R.	594,618	366	...	64	...	147	36	...	...
Tufts Medical College, Boston.—R.	594,618	342	34	46	11	95	32	...	...
MICHIGAN								656	154
Detroit College of Medicine, Detroit.—R.	309,653	158	...	68	...	98	33	...	...
Detroit Homeopathic Medical College, Detroit.—H.	309,653	20	9	6	3	36	28	...	...
Michigan College of Medicine and Surgery, Detroit.—R.	309,653	6	...	0	...	36	34	...	...
Grand Rapids Medical College, Grand Rapids.—R.	91,630	10	...	10	...	...	...	...	...
University of Michigan, Dept. of Medicine, Ann Arbor.—R.	16,033	349	22	47	5	66	35	...	...
University of Michigan, Homeopathic Dept., Ann Arbor.—H.	16,033	73	9	12	3	35	35	...	...
MINNESOTA								311	61
University of Minnesota, Homeo. Dept., Minneapolis.—H.	214,112	14	...	6	...	62	35	...	...
University of Minnesota, Dept. of Med., Minneapolis.—R.	214,112	180	8	36	1	99	35	...	...
Hamline University, Minneapolis.—R.	214,112	105	4	18	...	45	35	...	...
MISSISSIPPI.								124	22
University of Mississippi, Oxford.—R.	2,000	18	...	...	...	8	35	...	...
Mississippi Medical College, Meridian.—R.	15,079	104	2	22	...	20	25	...	...

* Evening Colleges. R, Regular; H, Homeopathic; E, Eclectic; Ph.-M., Physio-Medical; P, Panpathic.

NAME AND LOCATION OF COLLEGE.	Population of city in which college is located. (Census Bureau est. 1903.)	Number of students registered, session of 1906-7.		Graduates 1907.		Total number of teachers.	Weeks in college year.	Total students in all colleges in state, 1906-7.	Total graduates all colleges in state, 1907.
		Men.	Women	Men.	Women				
MISSOURI.								1,632	345
University Medical College, Kansas City.—R	173,064	238	...	57	...	65	34	...	...
Kansas City Hahnemann Med. Coll., Kansas City.—H	173,564	71	3	11	...	41	30	...	...
Ensworth Central Med. Coll., St. Joseph.—R	110,479	117	...	26	...	38	32	...	..
Barnes Medical College, St. Louis.—R	612,279	326	26	75	4	69	32	...	...
St. Louis University, St. Louis.—R	612,279	298	...	56	...	105	31	...	...
St. Louis College of Phys. and Surg., St. Louis.—R	612,279	270	...	44	...	37	29	...	...
American Medical College, St. Louis.—E	612,279	34	4	7	2	17	29	...	...
Homeopathic Med. Coll. of Missouri, St. Louis.—H	612,279	39	5	9	2	24	30	...	...
Washington University, St. Louis.—R	612,279	214	1	50	0	111	32	...	...
University of Missouri, Columbia.—R	5,551	61	5	2	0	25	35	...	...
NEBRASKA.								326	70
University of Nebraska, Omaha.—R	113,361	77	5	15	1	75	35	...	...
Creighton Medical College, Omaha.—R	113,361	163	4	35	0	57	32	...	...
Lincoln Medical College, Lincoln.—E	44,243	48	2	11	1	26	32	...	...
Nebraska College of Medicine, Lincoln.—R	44,243	25	2	6	1	38	33	...	...
NEW HAMPSHIRE.								62	11
Dartmouth Medical College, Hanover.—R	1,884	62	...	11	...	21	36	...	...
NEW YORK								2,375	480
Albany Medical College, Albany.—R	93,920	195	...	40	...	85	30	...	...
College of Physicians and Surgeons, New York.—R	3,716,139	387	...	93	...	150	34	...	...
Cornell University, New York.—R	3,716,139	318	24	62	10	173	34	...	...
Eclectic Medical College, New York.—E	3,716,139	66	17	11	0	41	30	...	...
Long Island College Hospital, New York.—R	3,716,139	342	...	87	...	144	33	...	...
New York Homeo. Med. College, New York.—H	3,716,139	109	...	22	...	78	30	...	...
New York Woman's Medical College, New York.—H	3,716,139	...	24	...	4	43	30	...	...
University and Bellevue Medical College, New York.—R	3,716,139	502	...	68	...	103	32	...	...
Fordham University, School of Medicine, New York.—R	3,716,139	24	...	...	...	28	34	...	...
Syracuse University, Syracuse.—R	114,443	147	6	24	0	56	33	...	...
University of Buffalo, Buffalo.—R	381,403	203	11	55	4	73	33	...	...
NORTH CAROLINA								371	43
Leonard Medical School, Raleigh.—R	13,934	149	...	24	...	10	29	...	...
University of North Carolina, Raleigh.—R	13,934	114	...	10	...	36	32	...	...
North Carolina Medical College, Charlotte.—R	20,050	69	...	14	...	32	28	...	...
Wake Forest School of Medicine, Wake Forest.—R	823	39	...	...	...	10	35	...	...
NORTH DAKOTA.								15	...
University of North Dakota, University.—R	...	15	...	...	...	22	35	...	...
OHIO.								704	167
Western Reserve University, Cleveland.—R	414,950	87	...	10	...	91	34	...	...
Cleveland Coll. of Phys. and Surg., Cleveland.—R	414,950	86	6	13	0	66	32	...	...
Cleveland Homeopathic Med. Coll., Cleveland.—H	414,950	37	6	9	1	56	30	...	...
Eclectic Medical Institute, Cincinnati.—E	332,934	92	5	28	3	29	30	...	...
Medical College of Ohio, Cincinnati.—R	332,934	129	4	34	1	89	32	...	...
Pulte Medical College, Cincinnati.—H	332,934	11	4	4	1	33	31	...	...
Miami Medical College, Cincinnati.—R	332,934	73	2	16	0	50	32	...	...
Ohio Medical University, Columbus.—R	135,487	128	4	21	0	42	32	...	...
Starling Medical College, Columbus.—R	135,487	69	1	17	1	53	32	...	...
Toledo Medical College, Toledo.—R	145,901	18	2	8	0	32	31	...	...
OKLAHOMA.								29	1
University of Oklahoma, Norman.—R	3,682	13	...	...	...	10	36	...	...
Epworth University Med. Dept., Oklahoma City.—R	12,800	14	2	1	...	25	29	...	...
OREGON.								131	36
University of Oregon, Portland.—R	98,655	76	10	17	3	39	30	...	...
Willamette University, Salem.—R	4,258	43	2	15	1	19	30	...	...
PENNSYLVANIA.								2,427	456
Temple College of Medicine, Philadelphia.—R.*	1,367,716	90	...	16	...	59	36	...	...
University of Pennsylvania, Philadelphia.—R	1,367,716	588	...	114	...	152	34	...	...
Hahnemann Medical College, Philadelphia.—H	1,367,716	188	...	48	...	78	32	...	...
Jefferson Medical College, Philadelphia.—R	1,367,716	629	...	126	...	124	34	...	...
Woman's Medical College, Philadelphia.—R	1,367,716	...	152	...	29	47	31	...	...
Medico-Chirurgical College, Philadelphia.—R	1,367,716	434	...	75	...	88	34	...	...
Western Pennsylvania Medical College, Pittsburg.—R	345,043	337	9	47	1	110	34	...	...
SOUTH CAROLINA.								130	21
Medical College of South Carolina, Charleston.—R	56,062	129	1	20	1	22	28	...	...
TENNESSEE.								2,082	425
Tennessee Medical College, Knoxville.—R	34,344	78	2	16	0	20	28	...	...
Knoxville Medical College, Knoxville.—R	34,344	22	10	1	0	13	28	...	...
University of Nashville, Nashville.—R	82,711	414	...	86	...	23	30	...	...
Vanderbilt University, Nashville.—R	82,711	215	...	42	...	35	30	...	...
University of Tennessee, Nashville.—R	82,711	167	...	41	...	31	30	...	...
Meharry Medical College, Nashville.—R	82,711	285	15	69	4	24	28	...	...
Memphis Hospital Medical College, Memphis.—R	113,669	388	...	66	...	37	28	...	...
College of Physicians and Surgeons, Memphis.—R	113,669	64	...	22	...	45	28	...	...
University of West Tennessee, Memphis.—R	113,669	23	...	3	...	22	28	...	...
University of the South, Sewanee.—R	440	150	...	39	...	22	28	...	...
Chattanooga Medical College, Chattanooga.—R	30,469	249	...	36	...	29	28	...	...
TEXAS.								834	110
Fort Worth University, Fort Worth.—R	27,192	173	3	19	0	37	28	...	...
University of Texas, Galveston.—R	31,742	181	7	27	...	22	32	...	...
Baylor University, Dallas.—R	44,159	56	1	5	1	36	28	...	...
Physio-Med. Coll. of Texas, Dallas.—Ph.M	44,159	38	6	2	...	25	29	...	...
Southwestern University Medical College, Dallas.—R	44,159	67	1	9	0	30	28	...	...
College of Physicians and Surgeons, Dallas.—R	44,159	103	...	23	...	15	28	...	...
Gate City Medical College, Texarkana.—R	5,256	195	3	53	1	21	28	...	...
UTAH.								46	...
University of Utah, Dept. of Med., Salt Lake City.—R	57,138	46	...	...	...	11	35	...	...
VERMONT.								165	34
University of Vermont, Burlington.—R	19,855	165	...	34	...	46	30	...	...
VIRGINIA.								528	103
Medical College of Virginia, Richmond.—R	86,148	212	...	29	...	43	32	...	...
University College of Medicine, Richmond.—R	86,148	182	...	43	...	62	32	...	...
University of Virginia, Charlottesville.—R	6,449	134	...	31	...	26	36	...	...
WEST VIRGINIA.								45	...
University of West Virginia, Morgantown.—R	1,895	45	...	...	...	11	36	...	...
WISCONSIN.								192	48
Milwaukee Medical College, Milwaukee.—R	312,736	123	7	27	...	67	32	...	...
Wisconsin College of Phys. and Surg., Milwaukee.—R	312,736	61	1	20	1	46	32	...	...

Marginal Number.	NAME OF COLLEGE.	1 Alabama 678	2 Arizona 10	3 Arkansas 510	4 California 375	5 Colorado 225	6 Connecticut 176	7 Delaware 51	8 Dist. Colum. 120	9 Florida 120	10 Georgia 595	11 Idaho 34	12 Illinois 2126	13 Indian Ter. 129	14 Indiana 752	15 Iowa 785	16 Kansas 457	17 Kentucky 812	18 Louisiana 532	19 Maine 195	20 Maryland 382	21 Massachusetts 950	Marginal Number.
1	Birmingham Medical College.—R	100	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	2	....	....	....	1
2	Medical College of Alabama.—R	154	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
3	Medical Dept. Arkansas University.—R	....	....	162	....	....	....	....	....	....	....	....	1	8	1	....	....	....	3	....	....	....	3
4	College of Physicians and Surgeons.—R	2	1	63	....	....	....	....	....	....	2	....	1	3	....	....	....	....	....	....	....	....	4
5	Cooper Medical College.—R	1	....	....	77	....	....	....	....	....	....	....	....	....	....	2	1	....	....	....	2	....	2	5
6	Medical Dept. Univ. of California.—R	....	....	....	50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6
7	Hahnemann Med. C. of the Pacific.—H	....	....	....	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7
8	Coll. of P. and S., San Francisco.—R	....	....	....	29	....	....	....	....	....	....	....	3	....	2	2	1	....	....	....	....	....	8
9	Oakland Coll. of Med. and Surgery.—R*	....	....	....	9	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	9
10	Coll. of Med., Univ. of So. California.—R	....	1	....	77	....	....	....	....	....	....	....	2	....	1	1	1	....	....	....	....	....	10
11	College of P. and S., Los Angeles.—R	....	1	....	6	2	....	....	....	....	....	....	2	....	2	2	1	....	....	....	....	....	11
12	Denver and Gross Coll. of Med.—R	....	....	....	....	45	....	....	....	....	1	....	9	....	4	3	4	....	....	....	2	2	12
13	Westminster Univ., Coll. of Med.—P	....	....	2	....	1	....	....	....	....	....	....	3	....	2	....	3	....	....	....	....	2	13
14	Colorado School of Medicine	....	....	....	3	27	....	....	....	....	....	1	2	....	2	1	1	....	....	2	....	2	14
15	Yale University, Dept. of Medicine.—R	....	....	....	....	105	....	....	....	....	....	....	2	....	....	1	....	....	....	....	....	12	15
16	George Wash. Univ., Dept. of Med.—R	1	....	....	3	1	....	....	45	2	1	1	13	....	5	3	1	4	5	....	12	5	16
17	Georgetown Univ., School of Med.—R	....	....	....	....	1	4	....	16	....	....	....	....	....	1	....	....	....	1	....	1	8	17
18	Howard University, Medical Dept.—R	2	....	....	....	....	....	3	32	3	8	....	6	....	2	....	1	1	4	....	5	3	18
19	Atlanta College of Phys. and Surg.—R	21	....	....	....	....	....	....	....	12	125	....	....	....	....	....	....	1	2	....	....	....	19
20	Atlanta School of Medicine.—R	27	....	1	....	....	....	....	....	10	167	....	....	....	....	....	....	....	3	....	....	....	20
21	Georgia Coll. of Eclectic M. and S.—E**	6	....	....	....	....	....	....	....	4	42	....	....	1	....	....	....	....	....	....	....	....	21
22	Medical College of Georgia.—R	....	....	....	....	....	....	....	....	1	76	....	....	....	....	....	....	....	....	....	....	....	22
23	Internat. Med. Miss. Coll., Atlanta.—R	....	....	....	....	....	....	....	....	....	12	....	....	....	....	....	....	....	....	....	....	....	23
24	American Medical Missionary Coll.—R	....	....	....	1	....	1	....	....	....	....	....	4	....	1	3	....	....	....	....	....	....	24
25	Bennett Coll. of Eclectic M. and S.—E	....	....	2	1	1	1	1	....	....	....	....	2	72	....	10	6	1	2	....	1	....	25
26	Illinois Medical College.—R	3	....	4	1	2	....	....	....	....	....	....	....	50	3	35	10	....	5	6	....	3	26
27	College of Medicine and Surgery.—Ph.M	....	....	....	....	....	....	....	....	....	....	....	....	24	....	1	1	....	....	....	....	....	27
28	College of Physicians and Surgeons.—R	1	....	....	2	2	....	....	1	....	....	....	....	305	2	13	24	6	5	1	....	1	28
29	Hahnemann Med. Coll. and Hospital.—H	....	....	3	....	....	....	....	....	1	....	....	....	48	....	12	16	6	1	....	....	....	29
30	Hering Medical College.—H	....	....	....	1	....	....	....	1	1	....	....	....	46	....	3	3	4	....	....	1	1	30
31	Jenner Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	....	185	....	....	....	....	....	....	....	....	31
32	Northwestern University Med. School.—R	1	....	....	8	3	....	....	....	....	1	6	197	....	24	41	6	2	3	....	....	....	32
33	Rush Medical College.—R	2	2	4	12	2	1	....	....	1	....	3	204	2	32	64	17	2	2	1	....	1	33
34	National Medical University.—P	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	34
35	Chicago Coll. of Med. and Surgery.—R	1	....	....	3	....	....	....	....	....	....	....	94	....	20	8	2	....	....	....	....	3	35
36	Dearborn Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	106	....	1	1	1	....	....	....	....	....	36
37	Indiana Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	5	....	200	....	....	....	....	....	....	....	37
38	Physio-Medical Coll. of Indiana.—Ph.M	....	....	....	....	....	....	....	....	....	....	....	2	....	16	....	....	....	....	....	....	....	38
39	Eclectic Medical College of Indiana.—E*	....	....	....	....	....	....	....	....	....	....	....	....	....	12	....	....	....	....	....	....	....	39
40	Indiana University School of Med.—R	....	....	....	....	....	....	....	....	....	....	....	4	....	99	....	....	....	....	....	....	....	40
41	Drake University Coll. of Medicine.—R	....	....	....	....	3	....	....	....	....	....	....	1	....	....	59	4	....	....	....	....	....	41
42	Keokuk Med. Coll. of P. and S.—R	....	....	1	....	....	....	....	....	....	....	1	41	....	1	59	4	....	....	....	....	....	42
43	Sioux City College of Medicine.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	....	....	....	....	....	....	43
44	State Univ. of Iowa, Hom. M. Dept.—H	....	....	....	....	....	....	....	....	....	....	1	1	....	....	38	1	....	....	....	....	....	44
45	State Univ. of Iowa. Med. Dept.—R	....	....	....	....	....	....	....	....	....	....	....	9	....	....	240	....	....	....	....	1	1	45
46	Kansas Medical College.—R	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	70	....	....	....	....	....	46
47	School of Medicine, Univ. of Kansas.—R	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	93	....	....	....	....	....	47
48	Hospital College of Medicine.—R.*	....	....	3	1	....	....	....	....	....	....	....	8	....	24	1	....	166	6	....	....	1	48
49	Kentucky School of Medicine.—R	2	1	5	....	....	....	....	....	3	4	2	5	....	24	....	....	123	6	....	....	2	49
50	Louisville Medical College.—R	5	....	5	....	....	....	....	....	1	1	....	3	1	20	2	2	69	7	....	....	1	50
51	Louisville National Medical College.—R	1	....	....	....	....	....	....	....	1	1	....	....	1	11	....	1	31	....	....	....	....	51
52	Southwestern Homeopathic Med. Coll.—H	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....	....	6	....	....	....	....	52
53	Medical Dept. Univ. of Louisville.—R	7	....	4	1	....	2	....	....	2	4	....	12	3	48	7	5	215	5	1	2	....	53
54	Flint Med. Coll. of New Orleans Univ.—R	1	....	1	....	....	....	....	....	....	2	....	....	....	....	....	....	....	27	....	....	....	54
55	Tulane University, Medical Dept.—R	53	....	12	....	....	....	....	....	9	10	....	....	1	....	....	....	....	235	....	....	....	55
56	Med. School of Maine, Bowdoin Coll.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	83	....	8	56
57	Baltimore Medical College.—R	2	....	....	2	....	34	1	3	2	4	....	....	....	....	1	....	1	1	9	59	55	57
58	Baltimore Univ. School of Medicine.—R	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	16	....	58
59	College of P. and S. of Baltimore.—R	3	....	....	....	1	17	1	....	1	1	....	....	....	1	....	1	1	1	4	41	20	59
60	Johns Hopkins Medical School.—R	6	....	4	9	1	15	1	4	2	9	....	3	....	7	6	4	2	....	6	33	3	60
61	Atlantic Medical College.—H	....	....	....	....	....	1	2	....	....	....	....	....	....	....	....	....	....	....	1	7	....	61
62	Woman's Med. Coll. of Baltimore.—R	....	....	....	....	....	2	....	....	....	....	....	....	....	1	....	....	....	1	1	9	1	62
63	Univ. of Maryland, School of Med.—R	....	....	....	....	....	7	5	1	5	11	....	....	....	1	....	1	1	1	1	126	2	63
64	Maryland Medical College.—R	1	....	....	....	....	4	5	....	....	2	....	1	....	1	....	....	....	....	3	88	3	64
65	Boston University School of Med.—H	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	2	....	63	65
66	College of Physicians and Surgeons.—R	....	....	....	....	....	3	2	....	1	1	....	....	....	....	....	....	....	....	1	....	92	66
67	Harvard University Medical School.—R	2	....	1	10	4	1	....	....	....	....	....	1	....	1	2	1	2	....	17	....	226	67
68	Tufts College Medical School.—R	1	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	1	....	15	....	201	68
69	Detroit College of Medicine.—R	....	....	....	....	....	....	....	....	....	....	1	....	....	3	....	....	1	....	....	....	....	69
70	Detroit Homeopathic Med. College.—H*	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	70
71	Michigan College of Med. and Surg.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	71
72	Grand Rapids Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72
73	Univ. of Michigan Dept. of M. and S.—R	2	....	....	3	1	2	....	....	1	....	2	26	....	24	2	....	4	....	....	....	2	73
74	Univ. of Mich., Homeo. Med. College.—H	....	....	....	....	....	1	....	....	....	....	....	2	....	4	....	....	....	....	....	....	....	74
75	Coll. of Hom. M. and S., U. of Minn.—H	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	75
76	College of M. and S., Univ. of Minn.—R	....	....	....	....	....	....	....	....	....	....	....	2	....	2	3	....	1	....	....	....	....	76
77	Medical Dept. of Hamline Univ.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	77
78	Med. Dept., Univ. of Miss., Oxford.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	78
79	Mississippi Med. Coll., Meridian.—R	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	79
80	Medical Dept., Washington Univ.—R	1	....	6	....	1	....	....	....	....	....	1	54	3	1	1	1	2	....	....	1	....	80
81	Univ. Med. Coll. of Kansas City.—R	....	....	2	2	1	....	....	2	....	....	....	....	5	....	2	84	....	1	....	....	....	81
82	Kansas City Hahnemann Med. Coll.—H	....	....	....	1	....	....	....	....	....	....	....	5	....	3	5	33	1	....	....	....	....	82
83	Nebraska College of Medicine.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	83
84	Eclectic Medical University.—E	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	6	....	....	....	....	....	84
85	Ensworth Central Medical College.—R	....	....	....	....	....	....	....	....	....	....	....	2	....	....	8	25	....	....	....	....	....	85
86	Barnes Medical College.—R*	1	....	10	1	2	....	....	....	....	....	4	76	6	8	5	8	5	1	1	....	1	86
87	St. Louis University Med. Dept.—R	1	....	6	2	3	....	....	....	....	....	1	64	1	2	11	9	3	4	....	1	....	87
88	St. Louis Coll. of Phys. and Surgs.—R	....	....	5	....	2	....	....	....	....	1	....	99	3	3	17	3	6	1	....	....	....	88
89	American Medical College.—E	....	....	3	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	89
90	Homeo. Med. College of Missouri.—H	....	1	2	....	....	....	....	....	....	....	....	12	....	3	2	1	....	....	....	....	....	90
91	Dept. of Med. of the Univ. of Missouri	....	....	1	....	1	....	....	....	....	....	....	1	....	1	2	1	....	1	....	....	....	91
92	Univ. of Nebraska Coll. of Med.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	92
93	John A. Creighton Med. College.—R	....	....	....	....	....	....	....	....	....	....	....	2	....	....	50	1	....	....	....	....	....	93
94	Lincoln Med. Coll. of Cotner Univ.—E	....	....	1	....	1	....	....	....	....	....	....	....	....	....	1	4	....	....	....	....	....	94
95	Nebraska College of Medicine.—R	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	95
96	Dartmouth Medical College.—R	....	....	....	....	....	6	....	....	....	....	....	2	....	....	....	....	....	....	4	....	19	96
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

Marginal Number.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	Marginal Number.
	Michigan 504	Minnesota 382	Mississippi 678	Missouri 1,057	Montana 41	Nebraska 318	New Hampshire.. 130	New Jersey..... 456	New Mexico 21	New York 2,324	Nevada 10	North Carolina... 494	North Dakota ... 79	Ohio 922	Oklahoma 110	Oregon 161	Pennsylvania 2035	Rhode Island 122	South Carolina .. 325	South Dakota 63	Tennessee 673	Texas 1,003	Utah 111	Vermont 125	Virginia 579	Washington 101	West Virginia.... 363	Wisconsin 414	Wyoming 6	Foreign 574	P. Is., Ha., P.R. 37	Total 24,256	
1	....	....	3	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	2	1	....	....	....	....	....	....	....	1	....	113	1
2	....	....	14	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	170	2
3	1	....	....	1	....	....	....	....	....	2	....	....	....	....	1	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	182	3
4	....	....	2	3	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	4	3	....	....	....	....	....	....	....	2	....	87	4
5	....	3	....	....	....	....	....	....	....	....	3	....	....	1	....	3	2	1	....	1	....	....	....	....	....	....	....	....	....	13	....	112	5
6	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	54	6
7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28	7
8	....	....	....	2	1	1	....	....	....	1	2	....	....	....	....	2	....	1	....	....	1	2	5	....	1	1	....	1	....	19	2	79	8
9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10	9
10	1	....	....	....	....	2	....	1	1	2	....	....	1	2	....	....	....	....	....	....	....	....	....	1	....	2	....	....	....	3	....	99	10
11	....	....	1	4	....	....	....	....	2	1	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	5	....	34	11
12	1	....	1	4	....	1	1	3	1	6	....	....	1	1	....	1	4	....	....	....	....	....	1	....	1	....	....	2	1	2	....	101	12
13	4	2	1	4	....	....	1	....	....	3	....	....	....	....	....	....	3	....	....	....	....	2	....	2	....	....	....	1	....	6	....	42	13
14	1	1	1	1	....	....	1	....	....	3	....	1	....	2	....	....	1	....	....	....	1	....	....	....	....	1	1	....	....	2	....	58	14
15	3	....	....	1	....	1	....	2	....	9	....	....	....	1	....	2	3	3	....	....	....	....	....	1	....	....	....	....	....	7	....	153	15
16	6	3	1	3	....	2	2	4	....	10	....	6	1	5	3	....	20	1	4	1	2	3	4	1	21	1	3	2	....	3	1	215	16
17	1	....	....	....	....	....	....	1	....	12	....	....	....	1	....	....	12	8	....	....	....	....	....	....	7	....	3	2	....	3	....	82	17
18	....	....	2	2	....	....	....	2	....	5	....	7	....	3	....	....	11	1	7	1	4	4	....	....	26	....	6	....	....	35	....	186	18
19	....	....	6	....	....	....	....	....	1	1	....	4	....	....	1	....	....	....	13	....	1	9	....	....	....	....	....	....	....	....	....	200	19
20	....	....	2	....	....	....	....	....	....	1	....	8	....	....	1	....	....	....	9	....	1	1	....	....	....	....	2	....	....	....	....	233	20
21	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	57	21
22	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	15	....	....	....	....	....	1	....	....	....	....	1	....	97	22
23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	23
24	10	....	1	1	....	....	1	1	....	....	....	....	....	4	....	....	2	....	....	....	1	....	....	....	....	....	....	1	....	14	....	46	24
25	4	7	....	2	....	7	....	....	....	4	....	....	....	5	1	....	7	....	....	2	1	1	1	....	....	....	....	7	....	4	....	153	25
26	3	7	4	12	....	3	....	....	3	....	....	2	8	15	2	....	3	....	3	....	10	5	3	....	4	....	....	....	....	3	....	212	26
27	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	28	27
28	12	10	....	9	3	8	....	1	....	4	....	....	1	9	....	1	....	1	1	8	....	3	3	....	....	5	1	46	....	12	....	501	28
29	6	3	1	1	1	2	....	....	....	6	....	....	....	5	....	....	3	....	....	1	....	1	1	1	....	2	....	8	....	7	....	136	29
30	3	1	....	1	....	1	....	....	....	2	....	....	....	1	1	....	....	....	....	....	....	2	1	....	1	1	....	....	....	4	....	80	30
31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	185	31
32	21	14	....	6	4	9	....	1	1	3	....	2	12	12	1	5	1	....	....	11	2	3	7	....	....	9	2	48	1	6	....	473	32
33	20	17	4	16	3	15	1	....	1	2	....	2	6	18	5	4	7	1	1	2	3	9	7	1	1	5	1	48	1	14	....	567	33
34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	250	34
35	20	10	1	4	3	2	....	....	....	5	1	....	4	20	....	....	12	1	....	1	2	2	....	....	....	....	4	11	....	5	....	239	35
36	....	....	....	1	....	....	....	....	....	1	1	....	....	3	....	....	....	....	1	....	1	....	....	....	....	....	....	2	....	7	....	126	36
37	2	....	....	....	2	....	....	....	....	....	....	....	1	12	....	....	1	....	....	1	1	....	....	....	....	....	....	1	....	1	....	227	37
38	....	....	....	....	....	....	....	....	....	1	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	25	38
39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	39
40	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	109	40
41	....	1	....	3	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	1	....	76	41
42	1	2	....	9	1	1	....	....	....	....	....	1	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	3	....	....	....	127	42
43	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	43
44	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	44	44
45	....	5	....	1	1	1	....	....	....	....	....	....	1	....	....	1	....	....	....	5	....	....	1	....	....	1	....	2	....	2	....	272	45
46	....	....	....	2	....	....	....	....	....	....	....	....	2	1	1	....	1	....	....	....	....	1	1	....	....	....	....	....	....	....	....	82	46
47	....	....	....	17	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	115	47
48	1	1	7	2	1	....	....	....	....	....	....	....	....	3	....	....	2	....	....	....	4	7	....	....	7	1	9	....	....	1	....	256	48
49	3	4	2	9	1	2	1	4	....	3	1	2	....	8	....	....	3	....	....	....	5	20	....	4	....	3	15	2	....	1	....	270	49
50	....	....	12	3	....	1	....	....	2	2	....	....	....	1	....	....	5	....	....	....	4	18	....	....	3	....	9	....	....	....	3	180	50
51	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	50	51
52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11	52
53	1	....	11	14	....	1	....	1	....	4	....	2	....	9	....	1	13	....	6	1	7	7	....	....	6	....	53	....	....	....	1	456	53
54	....	....	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	3	....	51	54
55	....	....	99	1	....	....	....	....	....	....	....	2	....	1	1	....	....	....	5	....	6	73	....	....	1	....	....	....	....	7	....	516	55
56	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	94	56
57	1	....	1	....	....	....	9	35	....	71	....	12	....	7	....	1	60	16	6	....	....	....	....	10	24	1	25	....	....	28	....	481	57
58	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	1	....	1	....	....	1	....	23	58
59	....	....	1	....	1	1	....	19	....	18	....	10	....	13	....	....	43	13	3	1	3	....	3	....	9	....	48	....	....	15	8	302	59
60	2	2	1	6	1	2	3	9	....	25	....	7	2	15	....	3	29	2	4	1	1	6	1	1	10	2	4	10	....	....	....	264	60
61	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	6	....	....	....	....	....	....	....	1	....	1	....	....	....	....	22	61
62	....	....	....	....	....	....	....	....	....	2	....	3	....	1	....	....	3	....	1	....	....	....	....	....	....	....	1	1	....	1	4	34	62
63	....	....	....	....	....	....	....	5	....	14	....	38	....	....	....	....	16	1	17	....	....	1	....	....	23	....	15	....	....	11	8	311	63
64	....	....	....	....	....	....	3	2	....	8	....	1	....	....	....	....	16	2	3	....	1	3	....	....	4	....	14	....	....	10	....	125	64
65	....	....	1	....	....	....	1	2	....	5	....	....	....	....	....	....	4	5	....	....	....	....	....	4	1	....	....	....	....	6	....	96	65
66	....	....	....	....	....	....	3	....	....	6	....	1	....	....	....	....	1	2	1	....	....	....	....	....	....	....	....	....	....	9	....	123	66
67	2	2	....	2	....	1	12	1	....	12	....	3	....	7	....	1	6	22	1	....	....	2	....	2	2	....	1	1	....	16	2	366	67
68	....	....	....	....	....	....	26	....	....	1	....	....	....	1	....	....	1	13	....	....	....	1	....	3	....	....	....	....	....	8	....	376	68
69	104	....	....	....	....	1	....	1	....	3	....	....	1	5	....	....	1	....	....	....	1	....	....	1	....	....	....	2	....	32	1	158	69
70	19	....	....	....	....	....	....	....	....	4	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	29	70
71	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	71
72	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10	72
73	168	4	1	3	5	3	....	1	....	28	....	2	1	28	1	....	22	2	1	4	....	4	2	1	2	3	1	5	....	9	1	371	73
74	29	....	....	1	....	1	....	....	....	17	....	....	....	13	....	....	10	....	....	2	1	....	....	....	....	....	....	....	....	....	1	....	89	74
75	....	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	75
76	....	157	....	....	1	....	....	....	....	....	....	....	10	....	....	....	....	....	....	4	....	....	....	....	....	1	....	7	....	....	....	183	76
77	1	85	....	....	1	....	....	....	....	1	....	....	8	1	....	....	2	....	....	2	....	....	....	1	....	2	....	3	....	2	....	109	77
78	....	....	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	18	78
79	....	....	97	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	....	....	....	3	....	....	....	10	....	215	79
80	1	....	1	121	....	....	....	....	....	1	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	2	....	....	1	....	....	....	238	80
81	....	1	....	123	1	3	....	....	2	....	....	....	....	....	5	1	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	74	81
82	....	....	....	17	....	1	....	....	....	2	....	....	....	1	1	....	1	....	....	....	1	....	....	....	....	1	1	....	....	1	....	27	82
83	1	....	....	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	36	83
84	....	....	....	23	....	....	....	....	....	....	....	....	....	1	3	....	1	....	....	....	....	1	....	....	....	....	....	1	....	....	....	117	84
85	....	....	....	74	....	2	....	....	....	....	....	....	1	....	2	....	1	....	....	....	1	13	1	....	1	....	3	1	....	4	....	352	85
86	1	3	5	180	1	1	....	....	1	....	....	1	....	4	3	....	....	....	....	1	4	4	....	....	....	7	1	17	....	6	1	268	86
87	2	1	1	104	....	1	....	....	1	3	....	....	....	5	1	2	3	....	....	....	....	4	....	....	....	....	....	....	....	3	....	270	87
88	2	2	1	86	1	1	....	....	1	....	....	....	....	....	6	3	3	....	....	....	....	9	....	....	....	3	....	....	....	....	....	....	38	88
89	....	....	....	32	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	44	89
90	2	....	....	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	61	90
91	....	1	....	51	....	1	....	....	....	1	....	....	....	....	....	1	....	....	....	....	1	1	....	....	....	1	....	....	....	1	....	82	91
92	....	2	....	1	....	72	....	....	....	....	....	....	1	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	167	92
93	2	2	....	2	....	98	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	2	....	1	2	2	....	50	93
94	1	....	....	....	....	39	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	27	94
95	....	....	....	....	....	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	62	95
96	....	....	....	....	....	....	21	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	7	....	....	....	....	....	....	....		96
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

Marginal Number.	NAME OF COLLEGE.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Marginal Number.
		678	10	510	375	225	176	51	120	120	595	34	2126	129	752	785	457	812	532	186	382	950	
		Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. Colum.	Florida	Georgia	Idaho	Illinois	Indian Ter.	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	
97	Albany Medical College.—R							1														3	97
98	College of Physicians and Surgeons.—R	4			4		9				2		4		2	2	2	1		4	2	9	98
99	Cornell University Medical College.—R	1		1	2		2											1	1	4		8	99
100	Eclectic Medical College.—E				1																		100
101	Long Island College Hospital.—H						6	1	1									2		2	1		101
102	New York Homeo. M. C. and Hosp.—H				1		5		1							2				1		1	102
103	N. Y. Med. Coll. and Hosp. for Wom.—H																					2	103
104	Univ. and Bellevue Hosp. Med. Coll.—R				1	2	14						1		2			3		1	1	8	104
105	Syracuse Univ. Coll. of Med.—R						1										1					2	105
106	University of Buffalo, Medical Dept.—R														1							1	106
107	Leonard Medical School.—R	12		1			1		2	5	11			1					1		2		107
108	Wake Forest School of Medicine.—R																						108
109	North Carolina Medical College.—R								1														109
110	Med. Dept. Univ. of North Carolina.—R									2	1												110
111	Med. Dept., Univ. of North Dakota.—R																						111
112	Western Reserve Univ. Med. Coll.—R														6		2					2	112
113	Cleveland Coll. of Phys. and Surgs.—R					1																	113
114	Cleveland Homeopathic Med. Coll.—H				1																		114
115	Eclectic Medical Institute.—E			1		1				1			7		7	2	1	10					115
116	Medical College of Ohio.—R								1						6			20					116
117	Pulte Medical College.—H																	1					117
118	Miami Medical College.—R	1											1		1			7					118
119	Ohio Medical University.—R											1	2		2							3	119
120	Starling Medical College.—R												1		1			2					120
121	Toledo Medical College.—R																						121
122	College of Medicine, Epworth Univ.—R													1									122
123	School of Med., Univ. of Oklahoma.—R													1									123
124	University of Oregon, Medical Dept.—R				1												1						124
125	Medical Dept., Willamette Univ.—R												1										125
126	Temple Coll. of Phila., Dept. of Med.—R*						2														1		126
127	Univ. of Pennsylvania, Dept. of Med.—R.	6		2	2	2	2	5	1	2	2	1	2		7	6	7	1		2	4	15	127
128	Hahnemann Med. Coll. and Hosp.—H				1		3	3	2				2			1	1	2		2	3	6	128
129	Jefferson Medical College.—R	2		3	6		9	11	1	1	4	2	3		3	3	5	3		4		15	129
130	Woman's M. C. of Pennsylvania.—R				2	1		1	3		1						2	3		2	1	4	130
131	Medico-Chirur. Coll. of Philadelphia.—R						2	4				1				2		2			2	2	131
132	Western Pennsylvania Med. Coll.—R*				1								5		4								132
133	Med. Coll. of State of South Carolina.—R									5													133
134	Tennessee Medical College.—R									1								10					134
135	Knoxville Medical College.—R	1		1						3	2				1								135
136	Med. Dept., University of Nashville.—R	50		32						8	6		6		2		1	14	52				136
137	Vanderbilt University, Med. Dept.—R	30		6	2						7		3	2				21	10				137
138	University of Tennessee, Med. Dept.—R	18		4	3					1	1		3	1		1		17	4				138
139	Meharry Medical College.—R	20		15						13	29		8	2	2	1	4	14	8		1		139
140	Memphis Hospital Medical College.—R	17		54						1				9					69				140
141	Memphis Coll. of Phys. and Surgs.—R	1		3							3				1				3				141
142	University of the South.—R	23		2	1					2	17			2				3	18				142
143	Chattanooga Medical College.—R	58	1	3	1		3			8	11	2	3	3		2		6	1		1		143
144	Univ. of West Tennessee, Med. Dept.—R	1		4										1					4				144
145	Med. Dept. Ft. Worth University.—R	1	1	2	1									16					2				145
146	University of Texas, Dept. of Med.—R																			1			146
147	Baylor Univ. Coll. of Med.—R													2		2			2				147
148	Physio-Medical Coll. of Texas.—Ph.M			4		1								4	1								148
149	Gate City Medical College.—R	4		43						4		1	18						19			1	149
150	Southwestern Univ. Med. Coll.—R		1																				150
151	College of Physicians and Surgeons.—R	1		12									1	15		1	9	1	6			1	151
152	University of Utah, Medical Dept.—R											1											152
153	University of Vermont, Medical Dept.—R						7													8		23	153
154	Medical College of Virginia.—R	2								2													154
155	University College of Medicine.—R	2			1			2		1	4							1			1	1	155
156	University of Virginia, Dept. of Med.—R	6		4			1	1	1		2						1	3	1		4		156
157	University of West Virginia.—R																						157
158	Milwaukee Medical College.—R						1									3							158
159	Wisconsin Coll. of Phys. and Surgs.—R														1								159
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

*Total exact; distribution based on that of 1905-6. **Figures for 1905-6.

SEC. 5.—Candidates for the degree of Doctor of Medicine in the year 1899 and thereafter shall have attended at least four courses of medical instruction, each course of at least six months' duration, no two courses of which shall have been in the same calendar year.

SEC. 6.—Colleges, members of this Association, are free to give to students who have met the entrance requirements of the Association additional credit for time on the four years' course as follows: (a) To students having the A.B., B.S., or equivalent degree from reputable literary colleges, one year of time; (b) To graduates and students of colleges, of homeopathic or eclectic medicine, as many years as they attended those colleges, provided they have met the previous requirements of the Association and that they pass an examination in materia medica and therapeutics; (c) To graduates of reputable colleges of dentistry, pharmacy, and veterinary medicine, one year of time.

On April 10, 1905, a new constitution was adopted and the following requirements became effective:

ARTICLE III.

SECTION 1.—Every college holding membership in this Association shall demand of each student, under the condition hereinafter stated, as a minimum requirement for admission to the medical course:

(a) A bachelor's degree from an approved college or university,

(b) A diploma from an accredited high school, normal school or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, and for graduation not less than four years of study embracing not less than two years (4 points) of foreign language, of which one must be Latin, two years (4 points) of mathematics, two years (4 points) of English, one year (2 points) of history, two years (4 points) of laboratory science, and six years (12 points) of further credit in language, literature, history or science. (See amendment, May 6, 1907.)

(c) An examination in the following branches: A. Required, 18 points: Mathematics, 4 points; English, 4 points; History, 2 points; Language (2 must be Latin), 4 points; Science (taken from physics, chemistry, botany, zoology), 4 points. See amendment, May 6, 1907.)

B. Optional (to 12 points): English, 2 points, History, 6 points; Language, 6 points; Manual Training, 2 points; Mechanical Drawing, 1 point; Natural Science (botany, biology, zoology), 2 points; Physical Science (chemistry, physics), 2 points; Trigonometry, 1 point; Astronomy 1, Civics 1, Geology 1, Physical Geography 1, Physiology and Hygiene 1, Political Economy 1.

(One point in any subject in a high school or academic course demands not less than five periods per week of forty-five minutes each for eighteen weeks).

(d) Certificates from reputable instructors recognized by the superintendent hereinafter to be mentioned or by any state board

Marginal Number.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	Marginal Number.
	504	332	678	1,057	41	318	120	456	21	2,324	10	494	79	922	110	151	2085	122	325	63	673	1,006	111	125	579	101	363	414	6	574	87	24,256	
	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	New Hampshire	New Jersey	New Mexico	New York	Nevada	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Foreign	P. Is., Ha,. P.R.	Total	
97	....	....	....	....	....	....	1	2	....	185	....	....	....	....	1	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	195	97
98	....	3	1	3	1	....	2	49	....	230	1	1	....	6	....	2	10	2	1	....	1	5	1	1	....	1	1	4	....	14	1	387	98
99	....	....	....	....	....	1	1	22	....	280	....	1	....	2	....	1	5	2	....	....	....	1	....	....	....	....	....	....	....	6	....	342	99
100	....	....	....	....	....	....	....	10	....	72	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	83	100
101	....	....	....	....	....	....	....	22	....	295	....	....	....	3	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	8	....	342	101
102	....	....	....	....	....	....	....	20	....	73	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	3	....	109	102
103	1	....	....	....	....	....	....	2	....	11	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	7	....	24	103
104	....	1	....	....	....	....	....	64	....	385	....	....	....	3	....	....	6	1	....	....	....	....	....	1	....	1	....	....	....	7	....	502	104
105	....	....	....	....	....	....	....	2	....	135	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	6	....	153	105
106	....	....	....	....	....	....	....	....	....	205	....	....	....	2	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	1	....	213	106
107	....	....	5	1	....	....	1	3	....	3	....	51	....	....	....	....	7	....	9	....	....	1	....	....	25	....	....	....	....	7	....	149	107
108	....	....	....	....	....	....	....	....	....	....	....	33	....	....	....	....	....	....	5	....	....	....	....	....	1	....	....	....	....	....	....	39	108
109	....	....	....	....	....	....	....	....	....	....	....	60	....	....	....	....	....	....	5	....	....	....	....	....	2	....	1	....	....	....	....	69	109
110	....	....	....	....	....	....	....	1	....	1	....	102	....	....	....	....	1	....	2	....	....	....	....	....	4	....	....	....	....	....	....	114	110
111	....	....	....	....	....	....	....	....	....	....	....	....	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15	111
112	....	1	....	....	....	....	....	....	....	3	....	....	....	62	....	....	9	....	....	1	....	....	....	....	....	....	1	....	....	....	....	87	112
113	1	....	....	....	....	....	1	....	....	....	....	....	....	79	....	....	2	....	....	....	1	....	....	....	....	....	....	....	....	7	....	92	113
114	....	....	....	....	....	....	....	....	....	5	....	....	....	28	....	....	8	....	....	....	....	....	....	....	....	....	....	....	....	1	....	43	114
115	....	1	....	....	....	....	....	2	....	....	....	....	....	32	....	....	8	....	....	....	2	3	....	....	....	....	19	....	....	....	....	97	115
116	....	....	....	....	....	....	1	....	....	1	....	....	....	94	....	....	....	....	....	....	....	....	1	....	....	....	2	....	....	7	....	133	116
117	....	....	....	....	....	....	....	....	....	....	....	....	....	13	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15	117
118	....	....	....	....	....	....	....	....	....	....	....	....	....	64	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	75	118
119	....	....	....	....	....	....	....	1	....	....	....	....	....	113	....	....	8	....	....	....	....	....	....	....	....	....	2	....	....	....	....	132	119
120	1	....	....	....	1	....	....	....	....	1	....	....	....	63	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	70	120
121	1	....	....	....	....	....	....	....	....	....	....	....	....	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20	121
122	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	16	122
123	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	13	123
124	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	59	1	....	....	....	....	....	....	....	....	18	....	1	....	3	....	86	124
125	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	43	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	45	125
126	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	77	....	....	....	....	....	....	....	....	....	....	....	....	6	....	88	126
127	1	5	3	2	....	....	4	38	....	21	....	10	....	20	....	1	351	5	4	....	2	9	2	....	3	7	4	2	....	22	3	588	127
128	....	....	1	1	....	....	....	24	....	11	....	....	....	5	....	....	115	....	....	....	....	....	....	....	....	1	....	1	....	3	....	188	128
129	3	2	2	3	1	2	3	43	....	19	....	22	....	17	1	6	361	6	1	1	3	2	17	2	4	4	9	3	....	17	....	629	129
130	2	....	2	1	....	2	1	12	....	12	....	....	....	4	....	1	72	1	2	....	....	....	....	....	....	1	....	....	....	19	....	152	130
131	1	....	....	....	....	2	....	29	1	12	....	....	....	3	....	....	356	2	....	....	....	....	1	....	....	1	....	....	....	11	....	434	131
132	....	....	....	2	....	....	....	....	....	2	....	....	....	18	....	....	296	....	....	....	....	....	....	....	....	....	18	....	....	....	....	346	132
133	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	125	....	....	....	....	....	....	....	....	....	....	....	....	130	133
134	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	1	....	....	1	....	61	....	....	....	3	1	....	....	....	....	....	80	134
135	....	....	1	....	....	....	....	....	....	....	....	4	....	....	1	....	1	....	1	....	12	1	....	....	....	....	....	....	....	3	....	32	135
136	....	....	58	3	....	....	....	....	....	2	....	10	....	....	2	....	....	....	19	....	121	22	....	....	4	....	2	....	....	....	....	414	136
137	....	....	16	2	....	....	....	....	....	....	....	2	....	....	2	....	....	....	8	....	76	22	....	....	2	1	....	1	....	2	....	215	137
138	....	....	12	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	93	5	....	....	....	....	....	....	....	1	....	167	138
139	....	....	43	15	....	....	....	1	....	1	....	5	....	3	4	....	2	....	18	....	53	28	....	....	1	....	1	....	....	8	....	300	139
140	....	....	134	3	....	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	54	43	....	....	....	....	....	....	....	....	....	388	140
141	....	....	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20	8	....	....	....	....	....	....	....	....	....	64	141
142	1	....	30	....	....	....	....	....	....	1	....	2	....	....	....	....	8	....	4	....	17	14	....	....	3	....	1	....	....	1	....	150	142
143	3	....	8	....	1	....	1	1	1	2	....	15	....	7	2	2	5	....	4	1	61	6	2	....	9	1	9	2	....	3	....	249	143
144	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	7	1	....	....	....	....	....	....	....	1	....	23	144
145	....	....	....	1	....	....	....	....	....	....	....	....	....	1	21	....	....	....	....	....	....	129	....	....	....	....	....	....	....	1	....	176	145
146	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	186	....	....	....	....	....	....	....	....	....	188	146
147	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51	....	....	....	....	....	....	....	....	....	57	147
148	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	....	....	....	....	....	....	....	....	....	44	148
149	....	....	7	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	96	....	....	....	....	....	....	....	2	....	198	149
150	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	67	....	....	....	....	....	....	....	....	....	68	150
151	....	....	....	....	....	....	....	....	1	1	....	....	....	....	4	....	....	....	....	....	2	44	....	....	3	1	....	....	....	....	....	103	151
152	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	44	....	....	....	....	....	....	....	....	48	152
153	....	....	....	....	....	....	16	....	....	22	....	....	....	1	....	....	3	2	....	....	....	....	....	79	....	....	....	....	....	4	....	165	153
154	1	....	....	....	....	....	....	1	....	1	....	15	....	1	....	....	1	....	5	....	1	1	....	....	162	....	18	....	....	1	....	212	154
155	....	....	....	....	....	....	....	5	....	1	....	34	....	....	....	....	....	....	1	....	1	....	....	....	120	....	5	....	....	1	1	182	155
156	....	....	7	....	1	....	....	....	....	3	....	6	....	1	....	1	3	1	3	....	4	....	....	....	74	....	3	1	....	2	....	134	156
157	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	40	....	....	1	....	45	157
158	8	2	....	....	....	....	....	1	....	4	....	....	....	1	....	....	....	....	....	3	....	....	....	....	1	....	....	104	....	2	....	130	158
159	....	1	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	57	....	1	....	62	159
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

of medical examiners duly authorized by law, may be accepted in lieu of any part of this examination. (See amendment, March 19, 1906.)

SEC. 2.—This examination must be conducted by or under the authority of the superintendent of public instruction of the city or state in which the college is located. In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission. (See amendment, March 19, 1906.)

SEC. 3.—A student may be allowed to enter on his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course.

SEC. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of the course, but no member of this Association shall admit a student to advanced standing without first communicating with the college from which such student desires to withdraw, and receiving from the dean of such college a direct written communication certifying to the applicant's professional and moral qualifications, and to the exact work he has done in said college.

SEC. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 6.—Credit may be given to the holder of a Bachelor's degree from an approved college or university for any work in the medical branches which he has successfully completed in his college course, only so far as it is the full equivalent of corresponding work in the medical curriculum. The holder of such Bachelor's degree may also be given time credits of not exceeding one year, provided that such student has had at least 40 hours in physics, 144 hours in chemistry, 24 hours in osteology, 292 hours in human or comparative anatomy, 124 hours in histology, 85 hours in embryology, 145 hours in physiology and 46 hours in materia medica; provided that the applicant for such time credits satisfies the professors of the chairs mentioned in the medical school as to his proficiency in these first-year medical studies, and satisfies the examiner, as provided for in Section 2, Article III, that his studies for which the degree was conferred include the above requirements. Such student may be allowed to complete a course for the medical degree in not less than 31 months, provided he completes the remainder of the medical curriculum in that time. (See amendment, May 6, 1907.)

SEC. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

SEC. 8.—Each student shall be obliged to attend 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

TABLE 8.--PHYSICIANS REGISTERED THROUGH RECIPROCITY BY STATE EXAMINING BOARDS DURING 1906.

State Board of	Total reg. through reciprocity by each state.	Connecticut.	Colorado.	Delaware.	Dist. of Columbia.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	Montana.	Nebraska.	New Hampshire.	New Jersey.	New York.	North Carolina.	North Dakota.	Ohio.	Pennsylvania.	South Carolina.	Texas.	Vermont.	Virginia.	Wisconsin.	Wyoming.
Connecticut	8	...	...	...	...	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...
Delaware	5	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
District of Columbia	11	...	...	...	...	1	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	1	1	...
Georgia	6	...	...	...	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...
Illinois	43	...	...	...	...	...	...	2	27	2	...	...	2	...	4	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	4	...
Indiana	21	...	...	...	...	...	4	...	3	2	3	1	...	...	2	...	...	...	1	...	...	...	...	...	3	...	...	...	...	...	2	...
Iowa	63	...	...	1	...	...	37	2	...	2	...	...	...	...	3	...	5	...	9	...	1	...	1	...	...	...	...	...	...	...	2	...
Kansas	56	1	1	...	...	...	13	3	9	...	1	...	1	...	...	...	18	...	6	...	...	...	...	1	...	...	...	2	...	...	...	...
Kentucky	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maryland	8	...	...	1	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...
Michigan	61	...	...	...	...	...	27	5	7	1	...	1	3	...	...	1	4	1	1	...	...	2	...	...	3	...	...	...	...	...	5	...
Minnesota	42	...	...	...	...	...	20	1	11	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	6	...
Missouri	46	...	1	...	1	...	...	2	6	29	2	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Nebraska	56	...	...	...	...	...	19	2	19	7	2	...	1	...	1	...	...	...	...	...	...	1	...	...	3	...	...	...	...	...	1	...
New Jersey	63	...	...	...	...	...	3	...	...	...	...	1	...	...	...	2	...	...	...	2	...	51	...	...	1	...	...	...	3	...	...	...
New York	21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	21	...	...	...	...	...	...	...	...	...	...	...
North Dakota	21	...	...	...	...	...	10	...	7	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Ohio	23	...	1	...	...	...	12	2	...	...	...	1	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
South Carolina	8	...	...	...	...	...	2	...	...	1	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
South Dakota	29	...	...	...	...	...	...	...	14	...	...	...	...	...	...	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Texas	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...
Vermont	4	...	...	...	...	...	1	...	...	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Virginia	19	...	...	...	2	1	1	...	1	...	...	...	11	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...
Wisconsin	61	1	...	...	...	...	36	...	12	1	...	...	...	...	3	4	...	...	3	...	...	...	...	...	1	...	...	...	...	...	...	...
Total received from each state through reciprocity	685	2	3	2	8	2	185	20	116	45	8	6	36	2	28	20	28	1	21	2	23	58	2	1	16	1	1	2	4	14	27	1

Table 8 shows the distribution of physicians registered through reciprocity during 1906. Reports have been received from all states and the statistics are now complete. Reading from left to right gives the number of physicians coming into the state named, as well as showing from what states they came. Reading from above downward gives the number of physicians going out of the state named, as well as showing in what states they were licensed. For example, the first line reading from left to right shows that Connecticut licensed 8 physicians through reciprocity, 2 of which came from Maine, 2 from Massachusetts, and 4 from New York, while the first line reading from above downward shows that 2 physicians from Connecticut were registered elsewhere through reciprocity, 1 locating in Kansas and the other in Wisconsin.

The states which registered the largest numbers through reciprocity were Iowa and New Jersey, each having registered 63; Michigan and Wisconsin registered 61 each, while Kansas and Nebraska registered 56 each.

Illinois had the largest number leave to secure license elsewhere under the reciprocity provision, the total being 185, Iowa coming second with 116, New York third with 58, and Kansas fourth with 45.

Altogether 685 physicians were licensed through reciprocity during 1906 who otherwise would have been compelled to undergo the second exacting written examination before securing licenses in their new locations.

ARTICLE V.

SECTION 1.—The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in the following table, and no college shall be recognized that falls below this standard over 20 per cent. in any one branch or over 10 per cent. in the total. Laboratory or clinic hours may be substituted for didactic hours.

CURRICULUM.

	No. of Hours of Lectures.	Hours of Laboratory.	Hours of Clinics.	Total.
Histology	30	60	..	90
Embryology	30	60	..	90
Osteology	30	..	..	30
Anatomy	190	230	..	420
Physiology	180	120	..	300
Chemistry and Toxicology	100	200	..	300
Materia Medica	40	20	..	60
Pharmacology	40	20	..	60
Therapeutics	90	..	..	90
Bacteriology	40	100	..	140
Pathology	100	140	..	240
Medical Zoology, Postmortem Work and Clinical Microscopy	30	60	..	90
Physical Diagnosis	20	..	80	100
Practice of Medicine	180	..	360	540
Surgery	180	..	360	540
Obstetrics	100	..	60	160
Gynecology	50	..	110	160
Pediatrics	40	..	60	100
Eye and Ear	30	..	30	60
Nose and Throat	30	..	30	60
Mental and Nervous Diseases	60	..	60	120
Electro-Therapeutics	20	..	40	60
Genito-Urinary Diseases	30	..	30	60
Dermatology and Syphilis	20	..	20	40
Hygiene and Public Health	30	..	..	30
Dietetics	30	..	..	30
Medical Jurisprudence	30	..	..	30
	1,750	1,010	1,240	4,000

On March 19, 1906, Article III, Section 1 (*d*), and Section 2 were amended as follows:

SECTION 1.—(*d*) Certificates from reputable instructors recognized by any state board of medical examiners duly authorized by law or by the superintendents of public instruction in states not having a board of examiners, may be accepted in lieu of any part of this examination.

SEC. 2.—This examination must be conducted by or under the authority of the board of examiners or of the superintendent of public instruction of the city or state in which the college is located. In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission.

On May 6, 1907, Article III, Section 1 (*b*); Section 1 (*c*) A, and Section 6 were amended so as to require two years of Latin instead of one year, as well as to abolish all time credits for baccalaureate degrees, and Section 2 was added to Article V. The new and amended portions are as follows:

SECTION 1.— (*b*) A diploma from an accredited high school, normal school or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, and for graduation not less than four years of study embracing not less than two years (4 points) of Latin, two years (4 points) of mathematics, two years (4 points) of English, one year (2 points) of history, two years (4 points) of laboratory science, and six years (12 points) of further credit in language, literature, history or science.

(*c*) An examination in the following branches: A. Required (18 points): Mathematics (4 points), English (4 points), History (2 points), Latin (4 points), Science (taken from physics, chemistry, botany, zoology), 4 points.

SEC. 6.—No time credit shall be given to holders of a bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of doctor of medicine.

ART. V, SEC. 2.—Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours work given in said college, arranged both by subjects and years.

The following colleges are members:

College of Medicine University of Southern California, Los Angeles, Cal.; Cooper Medical College, San Francisco, Cal.; University of California Medical Department, Berkeley and San Francisco, Cal.; Colorado School of Medicine, University of Colorado, Boulder, Colo.; Denver and Gross College of Medicine, Medical Department of the University of Denver, Denver, Colo.; Yale University Department of Medicine (Yale Medical School), New Haven, Conn.; George Washington University Department of Medicine, Washington, D. C.; Georgetown University School of Medicine, Washington, D. C.; Howard University Medical Department, Washington, D. C.; American Medical Missionary College, Battle Creek, Mich., and Chicago, Ill.; College of Medicine of the University of Illinois (College of Physicians and Surgeons), Chicago, Ill.; Illinois Medical College, Chicago, Ill.; Indiana Medical College, School of Medicine, Purdue University, Indianapolis, Ind.; University of Indiana School of Medicine, Bloomington, Ind.; State College of Physicians and Surgeons, Indianapolis, Ind.; Drake University College of Medicine, Des Moines, Iowa; College of Medicine

TABLE 10.—SECONDARY SCHOOLS IN THE UNITED STATES IN 1904-5.

Based on the Report of the United States Bureau of Education, 1907, and Reports from State Superintendents of Public Instruction.

Marginal Number.	State.	Number of grades preliminary to High School course.	PUBLIC. High Schools and Academies.					PRIVATE. High Schools and Academies.					PUBLIC AND PRIVATE. High Schools and Academies.					Proportion to the population—estimate, 1905—one school to every	Average number of teachers to each school.	Average number of students to each teacher.	Average number of secondary students in each school.	Average number of elementary students in each school.	Marginal Number.
			Having a course of four years.	Having a course of three years.	Having a course of two years or less.	Length of course not stated.	Total.	Having a course of four years.	Having a course of three years.	Having a course of two years or less.	Length of course not stated.	Total.	Having a course of four years.	Having a course of three years.	Having a course of two years or less.	Length of course not stated.	Total.						
	Column number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1	Alabama	7	33	23	7	14	80	22	2	1	4	29	55	25	8	18	109	18,223	3.1	34.1	59.4	45.5	1
2	Arizona	8	3	0	1	0	4	2	0	0	0	2	5	0	1	0	6	23,379	2.8	35.1	56.8	42.5	2
3	Arkansas	7	19	23	12	5	59	17	2	1	2	22	36	25	13	7	81	17,324	2.7	37.2	64.6	36.9	3
4	California	8	144	3	2	0	149	47	5	0	4	56	191	8	2	4	205	7,907	6.2	26.7	126.1	39.8	4
5	Colorado	8	47	4	1	0	52	5	1	0	0	6	52	5	1	0	58	16,395	6.8	24.2	145.8	19.2	5
6	Connecticut	8-9	54	11	10	1	76	44	2	1	4	51	98	13	11	5	127	7,791	5.9	19.1	98.4	14.9	6
7	Delaware	8	7	6	2	0	15	4	0	0	0	4	11	6	2	0	19	10,150	5.0	24.4	85.8	33.8	7
8	Dist. of Colum.	8	6	0	1	0	7	12	1	0	8	21	18	1	1	8	28	10,817	14.2	15.0	177.7	35.8	8
9	Florida	8	31	6	9	3	49	5	1	0	1	7	36	7	9	4	56	10,663	2.4	42.3	42.6	59.4	9
10	Georgia	6-7	40	74	17	9	140	33	14	4	4	55	73	88	21	13	195	12,338	2.7	40.3	52.5	56.6	10
11	Idaho	8	5	4	3	0	12	3	1	0	0	4	8	5	3	0	16	12,399	4.4	26.6	81.1	35.3	11
12	Illinois	8	304	101	8	4	417	51	7	1	1	60	355	108	9	5	477	11,151	4.7	28.4	109.3	25.3	12
13	Indiana	8	316	190	51	14	571	20	1	0	3	24	336	191	51	17	595	4,502	3.0	29.7	62.8	26.1	13
14	Ind. Territory.	8	6	0	0	2	8	4	2	0	1	7	10	2	0	3	15	33,200	2.6	47.8	52.6	71.6	14
15	Iowa	8	263	71	14	3	351	28	6	1	1	36	291	77	15	4	387	6,180	3.9	27.0	90.2	15.5	15
16	Kansas	8	153	83	54	0	290	9	2	0	1	12	162	85	54	1	302	5,240	2.7	32.6	69.1	19.8	16
17	Kentucky	8	45	20	11	5	81	51	12	0	6	69	96	32	11	11	150	15,276	3.9	28.3	67.5	43.0	17
18	Louisiana	8	23	16	4	1	44	14	7	0	2	23	37	23	4	3	67	22,584	3.8	27.2	65.1	39.1	18
19	Maine	9	157	6	1	11	175	30	1	0	0	31	187	7	1	11	206	3,452	3.0	23.7	64.7	5.4	19
20	Maryland	6-7	46	15	1	3	65	25	4	0	12	41	71	19	1	15	106	11,895	4.7	23.6	83.1	30.1	20
21	Massachusetts.	8	221	14	9	8	252	73	5	0	12	90	294	19	9	20	342	9,131	7.9	27.1	153.9	59.5	21
22	Michigan	8	285	41	44	3	373	18	0	1	0	19	303	41	45	3	392	6,524	4.0	23.1	88.5	23.3	22
23	Minnesota	8	159	2	3	0	164	24	2	0	3	29	183	4	3	3	193	10,217	5.0	24.2	106.3	15.6	23
24	Mississippi	8	19	55	13	13	100	15	7	5	5	32	34	62	18	18	132	12,743	2.4	33.1	44.1	46.6	24
25	Missouri	7-8	146	88	94	9	337	45	3	0	11	59	191	91	94	20	396	8,385	3.7	28.3	77.8	25.9	25
26	Montana	8	16	8	0	1	25	6	0	0	0	6	22	8	0	1	31	9,469	5.1	22.6	91.8	24.4	26
27	Nebraska	8	86	103	161	10	360	15	4	0	2	21	101	107	161	12	381	2,803	2.3	37.9	49.7	37.3	27
28	Nevada	8	1	4	1	0	6	...	...	..	...	...	1	4	1	0	6	7,056	1.7	50.9	28.5	57.5	28
29	N. Hampshire.	8	50	3	4	1	58	26	2	0	1	29	76	5	1	2	84	5,109	4.9	23.3	84.1	30.2	29
30	New Jersey	8	68	14	15	4	101	51	2	0	5	58	119	16	15	9	159	13,227	7.2	19.3	116.9	21.5	30
31	New Mexico	7	8	1	1	0	10	1	0	1	0	2	9	1	2	0	12	17,735	3.1	26.9	56.2	26.9	31
32	New York	8	467	37	24	4	532	157	5	2	21	185	624	42	26	25	717	11,021	6.5	28.1	132.3	54.2	32
33	N. Carolina	7	13	17	5	8	43	35	10	2	22	69	48	27	7	30	112	18,141	3.5	37.2	67.3	53.5	33
34	N. Dakota	8	24	9	5	0	38	1	0	0	0	1	25	9	5	0	39	9,826	3.1	24.4	58.1	18.3	34
35	Ohio	8	441	282	72	6	801	41	1	2	2	46	482	283	74	8	847	5,195	3.1	30.5	68.5	24.9	35
36	Oklahoma	8	18	2	0	1	21	1	2	0	1	4	19	4	0	2	25	19,920	4.0	25.5	91.2	11.7	36
37	Oregon	8	23	7	39	1	70	10	1	0	1	12	33	8	39	2	82	5,627	2.9	32.3	60.4	33.7	37
38	Pennsylvania	8	193	226	64	0	488	83	11	3	26	123	281	237	67	26	611	11,169	4.4	26.7	90.4	26.1	38
39	Rhode Island	8-9	19	2	0	0	21	10	0	0	4	14	29	2	0	4	35	13.431	8.8	19.4	147.5	23.4	39
40	S. Carolina	8-9	25	42	14	19	100	12	1	1	7	15	37	43	15	20	115	12,477	2.6	33.5	50.0	36.6	40
41	S. Dakota	8	43	27	33	0	103	5	1	0	0	6	48	28	33	0	109	3,927	2.4	32.6	44.9	33.8	41
42	Tennessee	7	23	54	11	11	99	39	7	2	10	58	62	61	13	21	157	13,676	2.7	37.8	51.0	48.4	42
43	Texas	6-7	172	105	11	10	298	38	5	2	2	47	210	110	13	12	345	10,015	3.2	30.1	71.0	25.6	43
44	Utah	8	4	2	7	0	13	11	0	1	0	12	15	2	8	0	25	12,389	9.1	25.5	180.7	52.0	44
45	Vermont	9	64	3	4	2	73	18	1	0	0	19	82	4	4	2	92	3,796	3.2	27.6	64.2	24.2	45
46	Virginia	7-8	25	29	8	8	70	40	7	2	12	61	65	36	10	20	131	14,911	3.6	28.6	63.1	38.6	46
47	Washington	8	51	8	31	0	90	11	3	0	2	15	62	10	31	2	105	5,700	3.9	27.8	83.2	24.8	47
48	W. Virginia	8-9	22	13	2	0	37	7	2	0	3	12	29	15	2	3	49	21,567	4.2	22.7	71.2	23.3	48
49	Wisconsin	8-9	222	14	1	0	237	21	0	0	1	22	243	14	1	1	259	8,714	4.7	23.1	98.3	10.3	49
50	Wyoming	7-8	6	4	1	0	11	1	0	0	0	1	7	4	1	0	12	8,960	2.8	27.4	49.8	27.9	50
	Totals	....	4,624	1,872	883	194	7,573	1,241	152	33	201	1,627	5,865	2,024	916	395	9,200	8,977	4.2	28.0	85.4	31.3	
	Column number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

The above table gives statistics showing the number of public and private high schools and academies in each state, together with the numbers having respectively courses of four years, three years and two years or less. The number of years in elementary grades required in each state preliminary to the high school course is given in the first column. In the last five columns respectively are given: the proportion of high schools to the population in each state, the average number of teachers to each school, the average number of students to each teacher and the average number of secondary students (high school grade) and elementary students (common school grade) in each school.

In proportion to the population when we add together public and private high schools (note Columns 16 and 17) Nebraska seems to be best provided with high schools, having 1 to every 2,803 people, although most of the high schools have courses of less than four years. The states having the smallest number in proportion to the population are Indian Territory, 1 to every 33,200; Arizona, 1 to 23,379; Louisiana, 1 to 22,584; West Virginia, 1 to 21,567; Oklahoma, 1 to 19,920; Alabama, 1 to 18,223; and North Carolina, 1 to 18,141. In twenty-nine states the proportion of high schools to the population is 1 to 10,000 or more people. The proportion for the entire country is 1 high school to every 8,977 persons.

Column 18 shows the average number of teachers in each school, while Column 19, which gives the average number of students to each teacher, shows whether the schools of the state on an average are overcrowded or not. In Nevada it will be seen that for every teacher in the high schools are 50.9 students, in Indian Territory there are 47.8 students to every teacher, in Florida 42.3, and in Georgia 40.3 to every teacher, or as many students that there are 35 or more students to each teacher.

Column 20 shows the average number of students in each school belonging strictly in the high school grade. The figures in Column 21 give the average number of students of elementary grades in each high school. It appears, therefore, that many of the high schools are not limited to the strictly high school grades.

University of Iowa, Iowa City, Iowa; Sioux City College of Medicine, Sioux City, Iowa; Kansas Medical College, Medical Department of Washburne College, Topeka, Kan.; School of Medicine University of Kansas, Lawrence, Kan.; Hospital College of Medicine, Louisville, Ky.; Kentucky School of Medicine, Louisville, Ky.; Louisville Medical College, Louisville, Ky.; Flint Medical College, Medical Department New Orleans University, New Orleans, La.; Baltimore Medical College, Baltimore, Md.; College of Physicians and Surgeons, Baltimore, Md.; Johns Hopkins University, Medical Department, Baltimore, Md.; University of Maryland School of Medicine, Baltimore, Md.; Woman's Medical College, Baltimore, Md.; Detroit College of Medicine, Detroit, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, Mich.; Hamline University College of Medicine, Minneapolis, Minn.; Medical Department University of Mississippi, Oxford, Miss.; University of Missouri Department of Medicine, Columbia, Mo.; University Medical College, Kansas City, Mo.; Medical Department St. Louis University (Marion-Sims-Beaumont College of Medicine), St. Louis, Mo.; Washington University Medical Department, St. Louis, Mo.; John A. Creighton Medical College, Medical Department of Creighton University, Omaha, Neb.; University of Nebraska College of Medicine, Lincoln and Omaha, Neb; University of Buffalo Medical Department, Buffalo, N. Y.; University of North Carolina Medical Department, Raleigh and Chapel Hill, N. C.; Wake Forest College of Medicine, Wake Forest, N. C.; University of North Dakota Medical Department, University, N. D.; Miami Medical College, Cincinnati, Ohio; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, Cleveland,

Ohio; Western Reserve University Medical College, Cleveland, Ohio; Starling-Ohio Medical College, Columbus, Ohio; University of Oklahoma Medical Department, Norman, Okla.; University of Oregon Medical Department, Portland, Ore.; Willamette University Medical Department, Salem, Ore.; Meharry Medical College, Medical Department Walden University, Nashville, Tenn.; Vanderbilt University, Medical Department, Nashville, Tenn.; University College of Medicine, Richmond, Va.; University of west Virginia Medical Department Morgantown, W. Va.; Marquette College Medical Department, (Milwaukee Medical College), Milwaukee, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 1764 Lexington Street, Chicago.

SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following requirements for admission to the freshman year are exacted by the colleges belonging to this Association:

SECTION 3.—He must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate that he has passed the entrance examination to a university, or a certificate from some legally constituted high school. The minimum preliminary education required by the Southern Medical College Association shall be, after Jan. 1, 1906, a grammar school education and two years' successful attendance at a recognized preparatory school or a high school, or its equivalent, said equivalent to be determined by a superintendent of public instruction. A student may be given one month from date of his admission to submit his certificate of qualification. And if he fails to possess the requisite educational qualifications in one or more branches, he may matriculate and attend his first course of lectures, but must present the requisite certificate before matriculating in the second course, and all tickets or certificates issued in such cases must have the conditions printed plainly on the face of each.

The following colleges are members:

Medical College of Alabama, Mobile, Ala.; Birmingham Medical College, Birmingham, Ala.; Medical College of Georgia, Augusta, Ga.; Medical Department, University of Mississippi, Oxford, Miss.; Medical Department, Epworth University, Oklahoma, Okla.; Medical Department, University of Tennessee, Nashville, Tenn.; Medical Department, University of Nashville, Nashville, Tenn.; Medical Department, Vanderbilt University, Nashville, Tenn.; Memphis Hospital Medical College, Memphis, Tenn.; Chattanooga Medical College, Chattanooga, Tenn.; Tennessee Medical College, Knoxville, Tenn.; Medical Department, University of the South, Sewanee, Tenn.; Medical Department, Fort Worth University, Fort Worth, Texas; Medical Department, Baylor University, Dallas, Texas; Medical Department, Southwestern University, Dallas, Texas; Medical College of Virginia, Richmond, Va.

The president is Dr. Christopher Tompkins, Richmond, Va.; the secretary-treasurer is Dr. G. C. Savage, Nashville, Tenn.

AMERICAN INSTITUTE OF HOMEOPATHY.

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition—Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.

2. Mathematics.—Arithmetical exercises in (a) vulgar fractions, (b) decimals, (c) percentage, (d) proportion, (e) square and cube root, (f) weights and measures, (g) decimal system. Mensuration.—(a) Definition of terms, (b) exercises under the more fundamental rules.

3. Geography.—General facts about North America.

4. History.—General, with particular reference to human progress in art, science and letters. (The examination to avoid exact dates and minor details.)

5. Latin Language.—(a) Grammar, (b) four books of Cæsar or its equivalent.

The colleges recognized as in good standing by this organization are:

Hahnemann Medical College of the Pacific; Denver Homeopathic Medical College; Hahnemann Medical College, Chicago; Hering Medical College; Homeopathic Medical Department of the State University of Iowa; Southwestern Homeopathic College, Louisville, Ky.; Kansas City Hahnemann Medical College; Southern Homeopathic Medical College, Baltimore, Md.; Boston University School of Medicine; Homeopathic Medical College of University of Michigan; Detroit Homeopathic College; College of Homeopathic Medicine and Surgery of University of Minnesota; Homeopathic Medical College of Missouri; New York Homeopathic Medical College; New York Medical College for Women; Cleveland Homeopathic Medical College; Pulte Medical College, Cincinnati; Hahnemann Medical College of Philadelphia.

The secretary is Dr. Frank Kraft, 2055 East Ninetieth Street, Cleveland, Ohio.

NATIONAL CONFEDERATION OF ECLECTIC MEDICAL COLLEGES.

The following are the present minimum requirements for admission to colleges members of this Association:

1. Good English education, to be attested by (a) a diploma from a graded high school or literary or scientific college or university, or (b) regents' medical student's certificate, or (c) entrance examination covering a four years' high school course including an elementary knowledge of natural history, physics and Latin.

2. Graduates from pharmaceutical, dental and veterinary colleges *may be* allowed one year's time on a four-year medical course only on condition that they comply with the entrance requirements and pass all examinations and perform all laboratory work embraced in the course of study of the freshman year. One year's advanced standing *may be* given students with degrees from a recognized literary college.

3. The course of instruction shall consist of a four-year graded course or its equivalent, as herein prescribed, including four sessions of seven months each in four different calendar years.

The following colleges are members of this Association:

American Medical College, St. Louis, Mo.; Bennett College of Eclectic Medicine and Surgery, Chicago, Ill.; California Medical College, San Francisco, Cal.; Eclectic Medical College of the City of New York, New York, N. Y.; Eclectic Medical Institute, Cincinnati, Ohio; Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga.; Lincoln Medical College, Lincoln, Neb.; Kansas City Eclectic Medical University, Kansas City, Mo.

The secretary-treasurer is John K. Scudder, M.D., 1009 Plum Street, Cincinnati, Ohio.

FOREIGN MEDICAL SCHOOLS.

ARGENTINE REPUBLIC.

Buenos Ayres.—Universidad Nacional de Buenos Aires.
Cordova.—Universidad Nacional.

AUSTRALIA.

Adelaide.—University of Adelaide.
Melbourne.—University of Melbourne.
Sydney.—University of Sydney.

AUSTRIA.

Gratz, Styria.—Kaiserliche Königliche Karl Franzens Universität.
Innsbruck, Tyrol.—Kais. König. Leopold Franzens Universität.
Krakow, Galicia.—Uniwersytet Jagiellonski w Krakowie.
Lemberg, Galicia.—C. K. Uniwersytet Imienia Cesarza Franciska I
Prague, Bohemia.—K. K. Deutsche Karl-Ferdinand-Universität.
Prague, Bohemia.—C. K. Ceská Universita Karlo-Ferdinandova.
Vienna, Nether Austria.—Kaiserliche Königliche Universität.

BELGIUM.

Brussels.—Université Libre de Bruxelles.
Ghent.—Université d l'Etat de Gand.
Liege.—Université de Liège.
Louvain.—Université Catholique.

BRAZIL.

Rio de Janeiro.—Faculdade de Medicine, Cirurgia e Pharmacia.

CANADA.

Halifax, Nova Scotia.—Dalhousie University (including Halifax College).
Kingston, Ontario.—Queen's University.
London, Ontario.—Western University.
Montreal, Quebec.—McGill University.
Montreal, Quebec.—Université Laval.
Quebec, Quebec.—Université Laval.
Toronto, Ontario.—University of Toronto (including the Ontario Medical College for Women, Trinity Medical College and Victoria College).
Winnipeg, Manitoba.—University of Manitoba (Manitoba Medical College).

CHILE.

Santiago.—Universidad de Chile.

CHINA.

Pekin.—North China Union Medical College.

CUBA.

Havana.—Universidad de la Habana.

DENMARK.

Copenhagen.—Kjobenhavns Universitet.

EGYPT.

Cairo.—Kasr il Aini (School of Medicine).

ENGLAND.

Birmingham.—University of Birmingham.
Bristol.—University College.
Cambridge.—University of Cambridge.
Durnam.—Durham University (Durham College of Medicine).
Leeds.—University of Leeds.
Liverpool.—University of Liverpool.
London.—University of London (including the following Medical Schools): *a* St. Bartholomew's Hospital, *b* Charing Cross Hospital, *c* St. George's Hospital, *d* Guy's Hospital, *e* King's College, *f* London Hospital, *g* St. Mary's Hospital, *h* Middlesex Hospital, *i* St. Thomas's Hospital, *j* University College, *k* Westminster Hospital, and *l* London (Royal Free Hospital) School of Medicine for Women.

Manchester.—Victoria University (Owen's College, founded in 1851, was merged in Victoria University in 1905).
Oxford.—University of Oxford.
Sheffield.—University of Sheffield.

FRANCE.

Faculties of Medicine (to the degree of doctor in medicine, including the five required examinations).
Bordeaux.—Université de Bordeaux.
Lille.—Université de Lille.
Lyons.—Université de Lyon.
Montpelier.—Université de Montpelier.
Nancy.—Université de Nancy.
Paris.—Université de Paris.
Toulouse.—Université de Toulouse.
Preparatory Schools of Medicine.—Graduates of the 16 following schools are allowed to take the first two examinations if they are presided over by some member of a medical faculty:
(*a*) *"Full Exercise,"* or complete course (covering the work of 16 inscriptions).
Algiers (Africa).—Académie d'Alger.
Marseilles.—Université d'Aix-Marseille.
Nantes.—Ecole de Plein Exercice de Médicine et de Pharmacie (part of the University of Rennes).
Rennes.—Université de Rennes.
(*b*) *Reorganized Schools.*—(Completing 12 inscriptions.)
Amiens.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Lille).
Angers.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Rennes).
Besançon.—Université de Besançon.
Caen.—Université de Caen.
Clermont.—Université de Clermont.
Dijon.—Université de Dijon.
Grenoble.—Université de Grenoble.
Limoges.—Ecole de Médicine et de Pharmacie (part of the University of Poitiers).
Poitiers.—Université de Poitiers.
Reims.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Paris).
Rouen.—Ecole de Médicine et de Pharmacie (part of the University of Caen).
Tours.—Ecole Préparatoire de Médicine et de Pharmacie (part of the University of Poitiers).

GERMANY.

Berlin, Prussia.—Königliche Friedrich-Wilhelm Universität.
Bonn, Prussia.—Rheinische Friedrich-Wilhelms-Universität.
Breslau, Prussia.—Königliche Universität.
Erlangen, Bavaria.—Königl. Friedrich-Alexanders Universität.
Freiberg, Baden.—Grossherzogliche Badische Albert-Ludwigs-Universität.
Giessen, Hesse.—Grossherzogliche Hessische Ludwigs-Universität.
Gottingen, Prussia.—Königliche Georg-August-Universität.
Griefswald, Prussia.—Königliche Universität.
alle, Prussia.—Vereinigte Friedrichs-Universität Halle-Wittenberg.
Heidelberg, Baden.—Grossherzogliche Ruprecht-Karls-Universität.
Jena, Thuringia.—Grossherzogliche und Herzogliche Sächsische Gesamt Universität.
Kiel, Prussia.—Königliche Christian-Albrechts-Universität.
Konigsberg, Prussia.—Königliche Albertus-Universität.
Leipzig, Saxony.—Universität.
Marburg, Prussia.—Universität.
Munich, Bavaria.—Königliche Bayr. Ludwig-Maximilians-Universität.
Rostock, Mecklenberg.—Universität.
Strassburg, Alsace-Lorraine.—Kaiser-Wilhelms-Universität.
Tübingen, Wurtemberg.—Königliche Eberhard-Karls-Universität.
Würzburg, Bavaria.—Königliche Julius-Maximilians-Universität.

GREECE.

Athens.—Τὸ ἐνμή Αθήναις ἐθνικὸν Πανεπιστιον. (National University.)

HUNGARY.

Budapest.—Budapesti Királyi Magyar Tudomány-Egye.em (Royal Hungarian University).
Klausenburg.—Kolozsvári Magyar Királyi Ferencz-Jozsef Tudomány Egyetem (Royal Hungarian Franz-Joseph University).

ICELAND.

Reykjavik.—Loeknaskoli (School of Physicians).

INDIA.

Bombay.—University of Bombay (Grant Medical College).
Calcutta.—University of Calcutta (Medical College of Bengal).
Lahore.—Panjab University (Lahore Medical College).
Madras.—University of Madras (Madras Medical College).

IRELAND.

Dublin.—Royal University of Ireland (including Queen's College, Belfast; Queen's College, Cork; Queen's College, Galway).
Dublin.—University of Dublin (The School of Physic in Ireland, Trinity College).
Dublin.—Catholic University Medical School.
Dublin.—Royal College of Surgeons, Schools of Surgery (including the Carmichael College of Medicine and the Ledwich School of Medicine).

ITALY.

Bologna.—Regia Università degli Studi.
Cagliari, Sardinia.—Università degli Studi.
Camerino.—Libera Università degli Studi.
Catania.—Regia Università degli Studi di Catania.
Ferrara.—Libera Università degli studi di Ferrara.
Genoa.—Regia Università degli Studi.
Messina.—Regia Università degli Studi.
Modena.—Regia Università degli Studi.
Naples.—Regia Università degli Studi.
Padua.—Regia Università degli Studi.
Palermo.—Regia Università degli Studi.
Parma.—Regia Università degli Studi.
Paria.—Regia Università degli Studi.
Perugia.—Università Libra degli Studi.
Pisa.—Regia Università degli Studi.
Rome.—Regia Università degli Studi.
Sassari.—Regia Università degli Studi.
Siena.—Regia Università degli Studi.
Turin.—Regia Università degli Studi.

JAPAN.

Kyoto.—Imperial University (part of medical school is located at Fukuoka).
Tokyo.—Imperial University (Tokio Medical College became Medical Department in 1877).
Medical schools are located also at Chiba, Sendai, Okayama, Kanazawa and Nagasaki.

MEXICO.

Mexico.—Instituto Medico Nacional.

NETHERLANDS.

Amsterdam.—Universiteit van Amsterdam.
Groningen.—Rijks-Universiteit te Groningen.
Leyden.—Rijks-Universiteit.
Utrecht.—Rijks-Universiteit.

NEW ZEALAND.

Wellington.—University of New Zealand (affiliated with the University of Cambridge, England).

NORWAY.

Christiania.—Kongelige Frederiks Universitet.

PERU.

Lima.—Universidad Mayor de San Marcos.

PORTUGAL.

Coimbra.—Universidade de Coimbra.
Lisbon.—Escola Medico-Cirurgica.

ROUMANIA.

Bukharest.—Universitatea din Bucuresti.
Jassy.—Universitatea din Jasi.

RUSSIA.

Helsingfors, Finland.—Kejserliga Alexanders Universitet.
Jurjev (formerly Dorpat).—Imperatorskij Jurjevskij Universitet.
Kazan.—Imperatorskij Kasanskij Universitet.
Kharkof.—Imperatorskij Charkovskij Universitet.
Kief.—Imperatorskij Universitet Sv. Vladimira.
Moscow.—Imperatorskij Moskovskij Universitet.
Odessa.—Imperatorskij Novorossijskij Universitet.
St. Petersburg.—Imperatorskij St. Petersbergskij Universitet: Including Vojenno-Medicinskaja Akademija (Military Medical Academy) and Zenskij Medicinskij Institut (Medical High School for Women).
Warsaw.—Imperatorskij Varsavskij Universitet.

SCOTLAND.

Aberdeen.—University of Aberdeen.
Dundee.—University of St. Andrews (University College).
Edinburgh.—University of Edinburgh.
Edinburgh.—School of Medicine of the Royal Colleges.
Edinburgh.—Surgeons' Hall School.
Edinburgh.—Medical College for Women.
Glasgow.—University of Glasgow (including Queen Margaret College).
Glasgow.—Anderson's College Medical School.
Glasgow.—St. Mungo's College and Glasgow Royal Infirmary.
Glasgow.—Western Medical School.

SIBERIA.

Tomsk.—Tomskij Universitet.

SPAIN.

Barcelona.—Universidad de Barcelona.
Granada.—Universidad de Granada.
Madrid.—Universiuad de Central de Espana.
Santiago.—Universidad.

Saragossa.—Universidad.
Seville.—Universidad de Sevilla. (To this university also belongs the Medical Faculty at Cadiz.)
Valencia.—Universidad Literaria.
Valladolid.—Universidad.

SWEDEN.

Lund.—Kungl. Karolinska Universitetet.
Stockholm.—Karolinska Institutet (Medico-Chirurgical Institute). (This institute has the same chancellor as the universities at Lund and Upsala, and is guided by a similar constitution.)
Upsala.—Kungl. Universitetet i Upsala.

SWITZERLAND.

Basel.—Universität.
Berne.—Kantonale Universität.
Geneva.—Université de Genève.
Lausanna.—Université.
Zurich.—Universität.

SYRIA.

Beirut.—Syrian Protestant College.
Beirut.—Université Saint Joseph de Beyrouth.

URUGUAY.

Montevideo.—Universidad.

WALES.

Cardiff.—University of Wales (Cardiff School of Medicine).

SUPERVISION OF EDUCATION IN NEW YORK.

The Educational Department of New York is the result of an evolution which has been in progress in that state for 123 years, the corporation known as the "Regents of the University of the State of New York" having been established in May 1784. The first board had about 30 members, this number being increased to 64 by the amendment of November, 1784. This body was soon discovered to be too large to be effective so in November, 1787, following the recommendations of a special committee of which Alexander Hamilton and Ezra L'Hommedieu were members, a new act was passed reducing the number of regents to 21, including the governor and lieutenant governor. Each member of the board was to serve without compensation, and the term of office was practically a life tenure. This act remained unchanged, except in so far as the jurisdiction of the university was enlarged, until in 1904, when the present law was enacted, reducing the number of regents to 11, with tenures of 11 years each.

The power of the university was at first to charter colleges and to incorporate academies and to supervise them, being required to visit and inspect them regularly and to make annual reports to the legislature. They were also authorized to confer degrees above that of master of arts. The field of work later included not only academies, colleges, professional and technical schools, but also libraries, museums, study clubs, extension teaching and similar agencies for home education. Supervision of common and normal schools was in the hands of a superintendent of common schools till 1821, when it was transferred to the secretary of state, and in 1854 again transferred to a state superintendent of public instruction, this office continuing until the unification law of 1904 transferred the duties to the commissioner of education under the Board of Regents. This act abolished the offices of the superintendent of public instruction and the secretary of the Board of Regents and placed the supervision of all educational matters in the hands of the Board of Regents.

At the present time, therefore, the supervision of all departments of education in New York is given to the Regents of the University of the State of New York, a body practically free from politics, and consisting of 11 members, one of which is elected by the legislature each year for a term of 11 years. The intention is to have each judicial district represented on the board so far as possible.

The powers of the Board of Regents have been gradually extended until at the present time they are as follows: "1. To grant charters to any institution, or society, for the promotion of science, literature, art, history or other departments of knowledge. These charters may be absolute, or limited by such restrictions as the board may see fit to impose; conversely the board may annul a charter for sufficient reason. 2. To confer degrees and govern their issuance within the state. The regents not only confer degrees directly, but fix by ordinance the conditions under which they may or may not be granted by colleges and universities. The abuse, purchase, or illegal use of degrees and diplomas is rigidly prosecuted under severe provisions of the penal code. 3. To inspect, visit and examine every higher educational institution of the state and to require of each a verified annual report. 4. To register domestic and foreign institutions in terms of New York standards, and to fix the value of degrees, diplomas and certificates from all parts of the world presented for entrance to schools, colleges and the professions. 5. To establish pedagogic and extension courses leading to a degree or certain license to teach. 6. To supervise the entrance requirements to the profession of medicine, law, dentistry, pharmacy, veterinary medicine, and the certification of nurses and of public accountants."

Medicine.—The regents have full control of the practice of medicine. They pass on credentials for admission to medical colleges, conduct entrance examinations and issue medical student certificates. A four-year high-school education is required for admission to the medical study. For the examination for license to practice medicine the question papers are prepared and the answers rated by the State Board of Medical Examiners, but the question papers are revised, edited and printed by the regents, who also conduct the examinations and issue the licenses. The regents have the power to revoke a license for cause. A classified list of medical schools is kept, showing which are accredited and which not. The members of the board of medical examiners are appointed by the regents from the licensed physicians of the state and any member of the board may be removed for misconduct, incapacity or neglect of duty. The secretary of the board of examiners is not a member of the board, but must be a licensed physician. He is appointed by and serves during the pleasure of the regents.

Law.—The regents are responsible only for the preliminary education of law students, the examination for entrance to the bar being conducted by the State Board of Law Examiners. The requirement for admission to the study of law is three years of high-school work.

Dentistry.—The regents issue certificates for admission to dental schools and licenses to practice dentistry. A four-year high-school course is required for admission, and the course of study in dentistry covers three years.

Pharmacy.—The regents are responsible only for the preliminary education of pharmacy students, which is one year of high-school work. The course in pharmacy is two years, the license examination being given by the State Board of Pharmacy.

Veterinary Medicine.—The preliminary requirement for entrance to a New York veterinary college is a four-year high-school education. The course of study in a veterinary college is of three years' duration. The regents issue entrance certificates and conduct the licensing examination, the answers being rated by the State Board of Veterinary Examiners.

Nurse Registration.—For registration the nurse must hold a diploma from a nurses' training school, maintaining a course of at least two years and registered by the regents as maintaining proper standards, and subsequent to graduation must pass a licensing examination as determined jointly by the regents and the State Board of Nurse Examiners.

Certified Public Accountants.—Four years of high-school work and three years of satisfactory experience in accounting, one of which must have been spent in the office of an expert public acountant, is required by the regents for a certificate as a certified public accountant.

The board also exercises legislative functions concerning all educational policies; those bearing on the elementary and secondary schools as well as those affecting the higher institutions. There already exists an elaborate system of educational laws, decisions and settled usages resulting from a century of experience and the gradual evolution of public sentiment. The board also gives direction concerning the management of state libraries and museums.

The commissioner of education, the executive officer of the Board of Regents, was elected by the legislature for a term of six years. At the expiration of this term of office the regents are empowered to appoint his successor to serve during their pleasure. Among other officials which are appointed on the nomination of the commissioner of education and the approval of the Board of Regents, are three assistant commissioners, a secretary to the commissioner and a secretary to the board of medical examiners.

The work of the education department is assigned to several divisions, as follows:

Accounts Division.—This division has charge of department finances, looks after necessary appropriations, receives and accounts for all fees, keeps account of all expenses of the department and of normal school, training class, institute and Indian school expenses. The employés of this division, four in number, are all under bond for the proper discharge of their duties.

Attendance Division.—This division looks after the enforcement of the compulsory education laws which have been brought into conformity with the child-labor laws, and there is cordial cooperation between the officials charged with the execution of both. This division also cooperates with boards of education, superintendents, school commissioners and trustees in all parts of the state in the enforcement of proper attendance at the public schools. There are three employés in this division.

Examinations Division.—This division, as its name indicates, has supervision of the examinations of pupils in the schools, of teachers' examinations, examinations for entrance to normal and professional schools, and examinations for those who wish to become certified public accountants or registered nurses. For these examinations the division prepares the question papers, marks and records the answers and certifies the results. This division has also the administration of examinations for license to practice medicine, dentistry or veterinary medicine, and for the titles of registered nurses and certified public accountants. In these subjects, however, the questions are prepared and the answers rated by the boards of examiners appointed by the regents, but the question papers are revised, edited and printed in the education department. The examinations are conducted and the licenses and certificates are issued by the examination division. The registering and accrediting of schools and the passing on credentials from educational institutions at home or abroad is also assigned to this division. There are 64 employés in this division.

Inspections Division.—This division inspects schools of all grades: colleges, technical and professional schools, normal schools, training classes, high schools, academies and common schools wherever practicable. The work of this division specially demands competency and good judgment on the part of those engaged in it. The division has 17 employés.

Law Division.—This division is responsible for advice regarding the meaning and proper construction of the educational laws. It answers inquiries, has charge of contested appeals and prepares cases for argument before the commissioner of education, when oral argument is desired. The form and legality of charters issued by the Board of Regents as well as the form and effect of educational bills appearing in the legislature are looked after by this division. Litigation and legal proceedings in the courts are also attended to with the aid of the attorney general's office. The division has two employés.

Records Division.—This division gathers and keeps all records bearing on the educational history of the state. Files are kept containing letters written or received by the department on educational matters as well as of publications, from whatever source, which will aid the future student of the state or national educational history. These files are kept for ready reference, being later transferred to the state library. There are five employés in this division.

Statistics Division.—This division, which has six employés, gathers, tabulates and aids in the interpretation of educational data.

Division of Libraries and Home Education.—This division has charge of the New York State Library, which was placed in charge of the regents in 1889 and made an integral part of the university. The term "home education" comprehends the entire group of agencies immediately administered by the library division, which promotes the higher education of adults at home as distinguished from the work done by the regular teaching institutions. It includes traveling libraries, public libraries, a library school, extension lectures and teaching, study clubs and exchanges. There are 126 employés in this division.

Division of Science.—This division includes all the scientific interests of the department, such as scientific investigations maintained by state aid, economic and industrial applications of science and the state museum. The staff includes the work of the state geologist and paleontologist, the state botanist and the state entomologist as well as mineralogist, a zoologist and an archaeologist. This division has 24 employés.

The enormity of the work being done by the education department of New York as well as the great value to education generally can best be appreciated when we consider the personnel of those serving in the department from the beginning. The Board of Regents has had among its members the most eminent educators of the state, many being of national and even of international repute. Mere mention of the names of George Clinton, Alexander Hamilton, John Jay, Philip Schuyler, George William Curtis and Whitelaw Reid at once bespeaks the high dignity of the University of the State of New York. The present commissioner of education, Andrew S. Draper, was himself formerly state superintendent of public instruction, then a member of the Board of Regents and then president of the University of Illinois. The assistant commissioners as well as the chiefs of divisions have come to be recognized as experts in their particular fields and are prominent figures in the educational activity of the United States. The character of those constituting the Board of Regents explains why their work has been so well appreciated by the New York legislature and why so many responsibilities have been placed on them. Among the factors working for high standards of education in the United States, the University of the State of New York will continue to hold a prominent place.

COLLEGE NOTES.

Colleges Merged.—Four colleges merged into two during the present year. At Louisville, Ky., the University of Louisville merged with the Kentucky University Medical Department, retaining the former name, while at Columbus, Ohio, the Ohio Medical University and the Starling Medical College merged, taking the name of the Starling-Ohio Medical College. Barnes Medical College, St. Louis, has transferred its entire property unencumbered and free from any restrictions, to the University of Missouri, complete possession of the property to be given in September, 1908.

Mergers with Colleges of Arts.—During the past year several important mergers between medical colleges and colleges of liberal arts have taken place. The Medical College of Alabama became the Medical Department of the University of Alabama.——Denver Homeopathic College has become the College of Medicine of Westminster University.——Sioux City College of Medicine has formed a close affiliation with Morning Side College.——Milwaukee Medical College is now the Medical Department of Marquette University.

Colleges Closed.—Two colleges were closed during the past year, the California Medical College (Eclectic), San Francisco, and the Grand Rapids Medical College, Grand Rapids, Mich.

Names Changed.—The American College of Medicine and Surgery, Chicago, has changed its name to the Chicago College of Medicine and Surgery; the Denver Homeopathic College, to the Westminster University School of Medicine, and the Southern Homeopathic Medical College, to the Atlantic Medical College.

New Colleges.—Only two new medical colleges have been organized during the past year, or three if we include the one in the Philippine Islands. The two in the United States are both night schools, one of which, the Reliance Medical College, is located in Chicago, and the other, the Hippocratean College of Medicine, in St. Louis. There are two other schools which have not been included in our lists. These are the Fordham University College of Medicine, of New York City, and the International Medical Missionary College of Atlanta, Georgia. Both of these schools have completed two sessions.

Mention should be made also of the University of Wisconsin College of Medicine, which will be organized in time to begin active work this fall, having already received authority from the Wisconsin legislature. Two years of the medical course will be taught.

Medical Schools with Divided Courses.—There are seven medical colleges giving the freshman and sophomore years in one city or place and the junior and senior years elsewhere. They are as follows:

NAME OF COLLEGE.	*1st and 2d yrs. at*	*3d and 4th yrs. at*
Univ. of California, Med. Dept.	Berkeley	San Francisco.
Rush Medical College	Chicago, South Side.	Chicago, W. Side
Indiana Univ. School of Med. and the State Coll. of P.& S.	Bloomington	Indianapolis.
Univ. of Kansas, Sch. of Med.	Lawrence	Kansas City.
Univ. of Nebraska, Coll. of Med.	Lincoln	Omaha.
Cornell Univ. Med. College	Ithaca or New York.	New York.
Univ. of North Carolina	Chapel Hill	Raleigh.

In 1908 the University of Missouri will give the first two years at Columbia and the last two at St. Louis.

Medical Schools Teaching Two Years Only.—There are seven medical schools which give only the first two years of the medical course. These schools are (1) the University of Mississippi, Oxford, Miss., (2) Wake Forest School of Medicine, Wake Forest, N. C., (3) University of North Dakota, Medical Department, University, N. D., (4) University of Oklahoma, School of Medicine, Norman, Okla., (5) University of Utah, Department of Medicine, Salt Lake City, Utah, (6) University of West Virginia, College of Medicine, Morgantown, W. Va., and (7) University of Wisconsin School of Medicine, Madison, Wis.

Entrance Requirements of Medical Colleges.—There are nine medical schools which already require for admission one or more years of work in a college of liberal arts. These colleges and the dates when such requirement began are as follows:

COLLEGE.	*No. of Years.*	*Began.*
Johns Hopkins Medical School	Degree	1893
Harvard Medical School	Degree	1900
Western Reserve Univ., Medical Dept.	3	1901
Rush Medical College	2	1904
University of California, Med. Dept.	2	1905
University of North Dakota, Med. Dept.	2	1905
University of Minnesota, Coll. of Med.	2	1907
University of Minnesota, Homeo. Dept.	2	1907
University of Missouri, Med. Dept	1	1906

The twelve following schools have declared their intention to increase their preliminary educational requirement to two years of work in a college of liberal arts, the requirement to begin with the year mentioned in each instance:

COLLEGE.	*No. of Years.*	*Begins.*
Wake Forest School of Medicine	2	1908
Yale Medical School	2	1909
George Washington University, Med. Dept.	2	1909
Northwestern University, Med. School	2	1909
University of Kansas, School of Med.	2	1909
University of Michigan, Med. Dept	2	1909
American Medical Missionary College	2	1910
State University of Iowa (R)	2	1910
Drake University, Med. Dept.	2	1910
Sioux City College of Medicine	2	1910
University of Pennsylvania, Med. Dept.	2	1910
University of Utah, Med. Dept.	2	1910

Several other schools have expressed their intention to require two years of university work, but are at present unable to give a definite date when the requirement will begin.

Besides the 21 colleges named above 30 others have voted to require, beginning with the session of 1910 or earlier, a year of nine months to be devoted to physics, chemistry, biology and one modern language, in addition to a four-year high-school education.

There are three state examining boards which have adopted a preliminary educational requirement above the usual four-year high school education, the board of North Dakota, which will require two years of work in a college of liberal arts from graduates of 1910 and thereafter; the board of Minnesota, which will require two years from graduates of 1912 and thereafter, and the board of Connecticut, which will require one year of work in a university from graduates of 1912 and thereafter. These requirements have been secured in Minnesota and North Dakota in support of the state university medical schools, which have adopted requirements of similar import.

Status of Toronto Colleges—American Medical Directory.—Dr. A. Primrose, secretary of the Faculty of Medicine of the University of Toronto, has called attention to some misstatements regarding Toronto medical colleges in the first edition of the "American Medical Directory." The statement is made in the directory that the present Faculty of Medicine of the University of Toronto was organized in 1844 as the Toronto School of Medicine. Dr. Primrose says that this is incorrect. The Faculty of Medicine of the University of Toronto was organized in 1843 as the Medical Faculty of King's College, became extinct in 1853 and was re-established in 1887. The Toronto School of Medicine, which was organized in 1847 and which became extinct in 1887, was an entirely different institution.

Reciprocity During 1906.—We have just secured complete data, as presented in Table 8 on page 594, showing the total number of physicians licensed through reciprocity during 1906. This table is of much interest, showing that 685 licenses were issued in 1906 to physicians who, without the provision for reciprocity, would have been required to undergo a second exacting test before securing the right to practice in their new locations. It is to be hoped that the standards of medical education may be made more uniform and that provision for reciprocity on a fair basis may be provided for by a larger number of states. Now about half of the states and territories have made such provision.

Physicians in Proportion to the Population.—The following table has been prepared from the best available information and shows for each state the number of physicians in proportion to the population. As will be seen, there is now one physician in this country to every 636 persons. Yet these statistics do not include the multitude of osteopaths, neuropaths and other irregulars who are actually practicing medicine in many states. This table shows the necessity of requiring that hereafter those who enter the medical profession should represent quality rather than quantity.

TABLE 9.—PHYSICIANS IN EACH STATE IN PROPORTION TO THE POPULATION.

State.	Population, 1905 estimate.	Physicians.	Proportion 1 to every:	State.	Population, 1905 estimate.	Physicians.	Proportion 1 to every:
Alabama ...	1,986,347	2,255	881	Nebraska ..	1,068,120	1,782	599
Arizona	140,276	238	589	N. Hamp..	429,118	680	631
Arkansas ..	1,403,239	2,478	566	N. Jersey..	2,103,039	2,412	872
California..	1,620,883	4,180	388	N. Mexico .	212,825	317	671
Colorado ...	602,925	1,718	351	New York.	7,901,754	12,714	622
Connecticut	989,500	1,424	695	N. Carolina	2,031,740	1,540	1319
Delaware ..	192,855	238	810	N. Dakota.	383,220	532	720
D. Colum...	302,883	1,174	258	Ohio	4,400,155	7,938	554
Florida	597,102	687	869	Oklahoma..	558,261	1,968	284
Georgia	2,405,821	2,952	815	Oregon	461,451	761	606
Idaho	198,382	302	657	Penna.	6,824,115	10,476	651
Illinois	5,319,150	10,210	521	Rhode Isl..	470,081	781	602
Indiana	2,678,492	5,157	519	S. Carolina	1,434,901	1,066	1346
Iowa	2,391,633	3,746	638	S. Dakota..	428,055	600	713
Kansas	1,582,473	2,557	619	Tennessee..	2,147,166	3,130	686
Kentucky..	2,291,444	4,016	571	Texas	3,455,300	5,018	689
Louisiana..	1,513,145	1,684	899	Utah	309,734	341	908
Maine	711,156	1,196	595	Vermont...	349,251	685	510
Maryland..	1,260,869	1,932	653	Virginia ...	1,953,284	2,087	936
M'chusetts.	3,088,546	5,642	547	Washington	598,538	1,160	516
Michigan ..	2,577,275	4,354	592	W. Virginia	1,056,805	1,493	708
Minnesota .	1,971,949	2,092,	943	Wisconsin .	2,256,897	2,543	897
Mississippi	1,682,105	1,916	878	Wyoming..	107,521	186	578
Missouri ...	3,320,405	6,251	531				
Montana...	293,534	359	818	Totals	82,086,061	128,968	636

The figures for the population in Table 9 are taken from the 1906 estimate made by the United States Bureau of Education. The figures for the number of physicians include those registered by examining boards during 1906.

The ten states having the largest number of physicians in proportion to their population are in their order: District of Columbia, 1 to 258; Oklahoma, 1 to 284; Colorado, 1 to 351; California, 1 to 388; Vermont, 1 to 510; Washington, 1 to 516; Indiana, 1 to 519; Illinois, 1 to 521; Missouri, 1 to 531, and Ohio, 1 to 544.

Medical Graduates Holding Baccalaureate Degrees.—Reports from the various colleges show that of the 4,980 medical graduates in 1907, 903, or 18 per cent., were also graduates from colleges of liberal arts. This is of interest when we consider that only two medical colleges, Harvard Medical School and Johns Hopkins Medical School, require baccalaureate degrees for admission.

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[For other information see second page following reading matter.]

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PSYCHIC CONTAGION OF CRIMINAL IMPULSE.

It took the world a long time to come to the idea of the communication of disease by actual contact with those suffering from the disease, or with something that had been so close to them as to carry contagious elements with it. It is very hard to understand at the present time how this precious knowledge, seemingly so obvious, was so long delayed. Practically only one disease—smallpox—was definitely known to be due to actual contagion or to personal contact with a patient or his secretions before the beginning of the nineteenth century. People thought that epidemic disease was due to something in the air, or atmospheric conditions were considered to influence certain natures in such a way as to produce particular diseases in them. When we speak of psychic contagion in our own time, most people are apt to look on the expression as eminently figurative and as containing very little, if any, literal truth. Many things in recent life, however, seem to make it clear that some not far distant generation will be quite as surprised that the men of our time did not recognize the influence of psychic contagion as we are now amazed at the generations which did not recognize physical contagion as a great force for evil.

There are many sources of evidence for the influence of psychic contagion in our day. It has been noted over and over again, and often called to attention to, that one peculiar suicide is nearly always followed by another of the same kind, and the second not infrequently by one or more resembling it more or less in various parts of the country. Such a series of incidents has happened too often to be regarded as a mere coincidence. It is evident that the first one has a causative influence in the production of the others, because of the mental suggestion which it carries with it, and because the detailed report of it has led to a mitigation of the abhorrence for such an act, which previously kept the unfortunate victim from taking such a means of ending existence. Besides, for certain morbid natures there is the added attraction of the sensation aroused by the unusualness of the method. This is the typical example of psychic contagion, but others are not hard to find, and a series of events that has attracted widespread attention in this country in the last few weeks seems to indicate that such criminal suggestions may be efficacious not only for crimes that concern the individual himself, but also for hideous brutalities which one finds it hard to reconcile with human nature as representative of rationality.

In and around New York there have been a series of assaults on little girls and of strangulations which has sent a thrill of horror through the country. The newspapers generally have spoken of it as a wave of crime. There seems to be no doubt, however, that it deserves the name of an epidemic of crime. There are a number of morbid individuals in all large cities in whom there exist, in a more or less dormant way, impulses to the worst forms of crime. As a rule, these impulses are not put into action because of the personal abhorrence of the individual, in spite of his morbid condition, and also for fear of the punishment that will surely be meted out for such a crime. When such people read accounts of crimes of this awful nature, their former temptations become almost obsessions to the commission of them. When they realize, further, that the criminals have escaped justice and are not likely to be captured, such an obsession may degenerate into what is practically an uncontrollable impulse if the opportunity presents itself. Psychic epilepsy is not a delusion of the medicolegal expert, but a sad, sure conclusion of the psychiatrist.

It is evident at a glance that the widespread publication of the details of such crimes is eminently injudicious, to use no harsher term. In Chicago a little while ago a girl committed suicide by jumping from the fifteenth story of a tall building; the newspapers gave a sensational account of the affair, with glaring headlines. As was to be expected, the next day another suicide was committed in the same manner. The reading of sensational accounts of such things is likely to be the determining factor which upsets the tottering equilibrium of mentality already entertaining the idea of such crimes, but hesitating between natural abhorrence and fear of punishment. If we would take up seriously the question of moral prophylaxis against the occurrence of these gruesome outrages, we must have some regulations to limit the publication of details of unnatural crime, at least in our daily papers. Another question, of course, concerns the punishment that is likely to be effective in putting a stop to such crimes as the assaults first mentioned when the criminals are caught. The slow ordinary course of justice is likely to have little deterrent effect in such cases, if indeed, because of the long-continued sensational attention which it attracts, it does not add to the temptation. There must be some such striking psychic influence as that which starts the offender on the path of crime.

There is a story told concerning a medieval town in which by psychic contagion a number of young girls in succession committed suicide and the municipal authorities were in despair as to how to put an end to the epidemic. At length an ordinance was passed that the body of the next suicide should be exposed, naked, in the market place for some days after the discovery of the crime. According to the story, one more suicide took

place, the punishment decreed was inflicted, and the epidemic of suicide came to an end then and there.

It seems probable, however, that our constitutional regulations against cruel or unusual punishments may prevent us from putting into practice any such striking and efficacious remedy for our psychic epidemics of crime as was used in the middle ages, but it seems not unlikely that some striking form of punishment, or the immediate infliction of punishment with as little delay as possible, would counteract the criminal tendencies in such cases. These problems are, after all, much more distinctly in the province of the physician who appreciates the morbid side of criminality than in those of the jurist or the legislator.

THE PHENOMENON OF HYPERSUSCEPTIBILITY.

Reference has previously been made to the phenomenon of hypersusceptibility as pointed out by Rosenau and Anderson of the United States Public Health and Marine-Hospital Service.[1]

They showed by a series of brilliant experiments[2] that, while horse serum is apparently a bland and harmless substance when injected into guinea-pigs, it renders the animal susceptible to a subsequent injection, and that if the latter is given after an interval of ten days the hypersusceptibility invariably manifests itself by severe symptoms which often result in the death of the animal. They believe that this phenomenon has a deep significance in relation to the problem of immunity, and expressed the opinion that resistance to disease may be gained largely through a process of hypersusceptibility.

These observations have attracted much attention, and, in the main, have been confirmed by a number of other observers during the past year.

Just issued from the Hygienic Laboratory is a further important report[3] of experimental studies in which it is shown that this phenomenon may be induced by any of the higher forms of albuminous substances, no matter from what source.

In addition to horse serum, Rosenau and Anderson used proteid substances from varying sources, such as blood serums from other animals, hemoglobin, egg albumin, milk, extract of peas and extracts of various bacteria.

On the other hand, the lower forms of nitrogenous compounds, such as leucin and tyrosin, appear to have no sensitizing properties, and this fact may be of use in physiologic chemistry to determine definitely between simple nitrogenous compounds and the proteid molecule.

The sensitizing agent and its mode of action are as yet unknown, but it is shown that it is not influenced by cold or formaldehyd. It is also shown that the toxic principle is not altered by various ferments such as taka-diastase, pancreatin, rennin, myrosin, invertin, emulsin, pepsin, ingluvin, malt and papain, nor by certain alkaloids, such as atropin, strychnin, morphin or caffein, nor is it altered by calcium chlorid, sodium nitrate, sodium chlorid, magnesium sulphate or ammonium sulphate.

Certain it is that profound physiologic changes are induced by the first injection of a strange proteid, and, by using certain bacterial proteids, Rosenau and Anderson also observed an immunity following the second spaced injection. Hypersusceptibility was easily induced in guinea-pigs by proteid extracts obtained from the hay, tubercle, anthrax, colon and typhoid bacilli, and, in the case of the two latter organisms, the hypersusceptibility produced was followed by a definite immunity to the corresponding infections. This was especially noticeable in the reaction induced by using the colon extracts. Ten days following the second injection of the extract the guinea-pigs were given 5 c.c. of a heavy emulsion of colon bacillus from 24-hour old cultures, but showed no symptoms. Three controls received the same injection and died in twelve hours.

These results seem to indicate that the phenomenon of hypersusceptibility has a definite bearing on the prevention and cure of certain infectious processes, and should lead to further earnest study in the hope that results of practical importance may be attained.

1. THE JOURNAL A. M. A., June 2, 1906.
2. Public Health and Marine Hospital Service, Hygienic Laboratory Bulletin, No. 29.
3. Public Health and Marine-Hospital Service, Hygienic Laboratory Bulletin No. 36.

THE VALUE OF ANTITOXIN IN TETANUS PROPHYLAXIS.

In this country tetanus antitoxin has given such successful results in preventing the development of tetanus after Fourth of July injuries that it has acquired the reputation of being almost a positive preventive of tetanus. There are too many possible sources of failure in the application of any therapeutic measure to expect invariable success, and hence it is to be expected that occasional instances will be reported in which antitoxin prophylaxis of tetanus has failed, even as it sometimes fails in diphtheria. A fairly careful scrutiny of the American literature for the past five years has not brought to light a single report of the development of tetanus in a person who had received a timely prophylactic dose of tetanus antitoxin. In European literature, however, a considerable number of such cases are now recorded, and on account of their bearing on the real value of prophylactic injections of tetanus antitoxin they are entitled to careful analysis.

At the end of 1906 Suter[1] was able to collect from the literature reports of twenty-two cases of unsuccessful prophylactic use of tetanus antitoxin, and we have since observed reports of still two other cases.[2] Analysis of these reports shows, in the greater number of instances, evident reasons why the antitoxin was ineffective. In

1. Beitr. z. klin. Chir., 1907, lii, 694.
2. Terrier and Mercade: Revue de Chir., 1907, xxvii, No. 1.

in a few there was too long an interval between the time of infection and the time of injection of antitoxin; in a few there was evidence that the antitoxin was inactive; a few others followed dusting of the wound with dry antitoxin powder, a method which is highly unreliable because of the uncertainty of its absorption from wounds in all possible conditions of infection; and in one case tetanus did not appear until forty-seven days after the accident and thirty-nine days after the antitoxin injection, when the immunity had presumably disappeared or greatly diminished. Consequently in but a very few of the reported cases has there been an obvious failure of the antitoxin to accomplish the expected immunization. If on the other side we set the many thousands of cases in which tetanus antitoxin has been used prophylactically with apparent success, we find the actual number of failures to be surprisingly small. For example, in Geneva in one clinic 700 prophylactic injections have been given with but one mild case of tetanus, and many other hospitals and clinics report each several scores or hundreds of patients prophylactically treated, without a single case of tetanus. Of course it is impossible to estimate the exact value of prophylactic measures in tetanus, since we can never tell just how large a proportion of our patients with suspicious wounds would develop tetanus, but it is noticeable that many of the most noted European surgeons are earnest advocates of antitoxin prophylaxis in all lacerated and dirt-contaminated wounds. Kocher in the German Surgical Society congress stated that he would consider any physician entitled to a reproof who failed to use this measure in a case of injury with contamination of the wound by street dirt.

Whether the apparent lack of failures in tetanus prophylaxis in this country depends on the neglect of physicians to report them, or is a real condition depending perhaps on a uniformly active antitoxin, we can not say. It is noticeable that a large proportion of the reported failures were in France, and in the twenty-four collected, Pasteur serum had been used in thirteen, Behring serum in six, and Tizzoni serum in two. It is quite probable, however, that much of this preponderance of French cases depends on the more widespread use of antitoxin prophylaxis in France than in other countries. Even the German serum, which is known to be uniformly standardized, has a few failures charged against it, but there is always the possibility that any preparation of antitoxin may become deteriorated after standardization, through improper storage or other causes. It should be added, however, that the serum used in the twenty-four cases mentioned was apparently not always inactive, for many of the patients—about two-thirds—recovered. Of the six patients treated with the German serum but one died, while seven of the thirteen French cases were fatal. Hence, even unsuccessful antitoxin prophylaxis with antitoxin increases the chances of recovery in those cases in which tetanus appears.

PUBLIC OPINION AND MEDICAL EDUCATION.

The public holds the medical profession responsible for any abuses which occur in connection with medical institutions and in medical affairs. This is as it should be, since medical men alone are in position to recognize such abuses and to suggest the steps necessary for their correction. If the facts about any worthy reform are plainly stated and it is made clear that the reform asked for is for the benefit of the public and not merely for the selfish interests of the medical profession, the public, through the public press, can usually be counted on for strong support and it will join the profession in demanding that reform. That this is true the medical profession has been slow to recognize.

The above statements are well supported in the extensive publicity given by the press to a statement issued by the Council on Medical Education some weeks ago regarding medical education in the United States. The statement referred to was sent out to correct a number of erroneous articles or misinterpretations which appeared following the educational conference last April and which were based on assertions not authorized by the council nor found in the stenographic report of the conference. For instance, the press reported that "3,000 of every 4,000 medical graduates are incompetent," etc., which was probably a misinterpretation of the statement that, as a result of an inspection of medical colleges by the council, only about 50 per cent. were found to be properly equipped, 30 per cent. needed to make considerable improvement, while 20 per cent. of the colleges were unworthy of recognition. The statement which was issued to the press by the council contained many of the facts given in the report to the House of Delegates at Atlantic City last June, as well as a strong appeal for two things: endowments for medical colleges and better state control of medical licensure. Many newspapers not only published the statement entire, but added strong editorial comments.

The *Gazette,* Trenton, N. J., emphasizes the importance of a proper medical training as well as the dependence of the laity on the profession for the exposure of frauds in medical institutions. It says:

> While the choice of a physician is often a mere matter of accident, it is the right of the patient to know that the man in whose hands he places his life has had the advantages of the best training the country affords. For that reason the American Medical Association should go a step farther. In a matter of so much importance merciless exposure is probably the best that can be applied to a fraud.

The same points are emphasized in an editorial by the Wilkes-Barre, Pa., *Record,* which also expresses appreciation of the work being done. Says the *Record:*

> The science of medicine is so intimately associated with questions that relate to life and death, and the happiness and prosperity of the human family, that the highest qualifications and preparation should be demanded of the practitioner. Considering all that is to be learned, it has seemed a very loose appreciation of the responsibilities of practice to permit a boy of meager preliminary educa-

tion, perhaps not even that of a high school, to spend a few years in one of the many for-revenue-only medical schools and then take charge of a patient whose life depends on the skill and ability of the physician. It is very evident that the American Medical Association has begun a timely and much needed agitation.

The certainty of a strong public demand as an aid in securing better medical standards is shown in the following extract from the Omaha *Bee:*

Reform that comes from the inside is usually effective and lasting and for that reason the medicine-taking public will find cause for encouragement and congratulations in the effort being made by the American Medical Association, an organization representing the best in modern medical service, to improve the condition of medical education in the United States. . . . The day of the cheap doctor, who learns by experiment on helpless victims what he should have learned by study, is rapidly passing. Graduates of medical colleges are very generally required to be worthy of their titles. Nevertheless, it is a significant sign that the demand for better service and better equipment in modern medical practice should be emphasized by the American Medical Association.

The Chicago *Record-Herald* puts its finger on the worst flaw in medical education to-day when it refers to low standards of preliminary education:

Many have felt that the real trouble lies in the extremely inadequate "preparation" of many, if not most, of the medical students. The medical training may be good, but if the entrance examinations are perfunctory the students may be utterly incapable of profiting by it. The final examinations and the state tests are notoriously inconclusive, as they involve a certain amount of "cramming" and little else.

The Milwaukee *Sentinel* refers to what the physician should be and what the public rightfully expects him to be:

The physician, above all others, is the man whose education should be broad and complete. To him are intrusted the lives of his fellow men, and half-baked youngsters without preliminary mental training should not be permitted to travesty so serious a profession. The movement started by the association for an improvement of the standard of American medical schools should be encouraged.

The necessity of educating the public not only for the obtaining of good laws, but in order to guarantee their enforcement and also the fact that this education must come from the medical profession are brought out by the *Evening Standard,* New Bedford, Mass.:

At the basis of good laws, well enforced, there must necessarily be an alert and intelligent public opinion, and such an opinion would be as efficacious in weeding out the incompetents as ever the laws could be. We think the doctors ought to remember that, and so be aggressive leaders in the creation of such public opinion. . . . Somewhere there is a point where people have got to take care of themselves, and an intelligent public opinion is one of the surest means to that end. We think the doctors have a great field in this direction.

That public sentiment for medical reforms must be created by the medical profession itself is emphasized by the Hoboken, N. J., *Observer:*

A state never advances beyond the point demanded by the majority of its citizens. It does not come within its functions to initiate reforms affecting the people as a whole, or any profession as a class. Reforms must spring from the people, and advances in a profession must be made by the predominant sentiment in that profession.

The above newspaper comments are only a few of numerous similar statements made, from which several pages could easily be filled. Enough has been quoted, however, to show how the public view these matters. As suggested by the above comments, the laity looks to the medical profession to bring about better standards of medical education. It is as much the duty of the medical profession to demand laws protecting the public from the ignorant and poorly prepared physicians being turned out each year by the number of low-grade institutions which are parading as medical colleges as it is for them to decry the adulteration of foods and the designs of advertising quacks. To fulfill that duty requires that a public demand be created for laws which will ensure the adoption and enforcement of higher standards. The legislators who enact our laws are usually willing to listen to public demands. In working for any needed reforms, therefore, it is wise to secure the cooperation of the public.

CONTROL OF MEDICAL EDUCATION IN NEW YORK.

Elsewhere in this issue (page 598) will be found an article describing the supervision of education in New York. This is of general interest since it gives a clear, concise statement regarding the University of the State of New York and the Board of Regents. It is of more particular interest, however, because it shows that the control of medical education and of medical licensure can be provided for on a non-political basis. The Board of Regents has eleven members, one of whom is elected each year by the state legislature to serve for a term of eleven years. The board has charge of all educational matters, including medical and other professional schools, with the result that medical education and licensure in New York are carefully looked after. The regents have the right to charter medical colleges, to inspect them and to revoke the charters for cause. They inspect the credentials of prospective medical students, conduct preliminary examinations and issue medical students' entrance certificates, without which students can not enter the medical colleges of New York. Incidentally, it is to be regretted that the standard of entrance requirement to medical colleges is simply a high school course; probably, however, the regents will soon raise these requirements to agree with those of other states which have secured a requirement of one or two years' work in a college of arts.

The regents not only fix the standards for preliminary and medical education, but also conduct the examinations for license to practice medicine in the state. The Board of Medical Examiners furnishes the questions and grades the answers, but the question papers are edited and revised by the regents and the record of grades is kept by them. The nine members of the Board of Medical Examiners are appointed by the regents, and any member can be removed by them for misconduct, incapacity or neglect of duty. The secretary to the Board

of Medical Examiners, although a licensed physician, is not a member of the board and holds his position during the pleasure of the regents. Thus complete control is placed in the hands of the regents.

The regents have heretofore lacked the proper authority to prosecute violations of the medical practice act, but the new law apparently supplies this authority. The practice act, however, does not seem to provide the machinery to enforce its provisions; this, if we understand the new law, being left to the state and county medical societies. The prosecution of individuals practicing medicine without a license and of those guilty of malpractice should be kept in the hands of the regents, who are otherwise responsible for the enforcement of the medical practice act. Since the authority to prosecute violations has been furnished, however, it is probable that the means for the enforcement of the practice act may also be developed.

New York is certainly to be congratulated on its nonpolitical system of control over all departments of education, a system that is well worth careful study on the part of all who are interested in state control of medical education and medical licensure.

STATE BOARD EXAMINATIONS AND MEDICAL EDUCATION.

Besides ascertaining the fitness of the candidates to practice medicine, state board examinations can also furnish a most effective stimulus to the improvement of medical education. A poor medical school would soon be forced to alter its instructions if any considerable proportion of its recent graduates should take low standing in state board examinations. To be effective, however, these examinations must be such as to differentiate sharply between the real, effective, assimilated knowledge, which can be acquired only by first-hand acquaintance with the subjects in clinic and laboratory, and the superficial, ill-understood, pseudo-knowledge procurable by memorizing quiz compends.

It is a notorious fact that a few medical schools are conducted altogether too much on this latter plan. If the examinations are also framed on the quiz-compend model, it follows that graduates of such schools will take equal or perhaps even higher standing than the graduates of schools which insist on thoroughness. This is a statement of fact supported by the small percentage of failures at state board examinations by graduates of some schools known to be little better than quiz classes. Indeed, one might never have seen the inside of a medical college or hospital, never made a dissection or looked through a microscope, in a word, know nothing worth knowing about medicine, and pass a very creditable compend-examination. Such examinations will demonstrate nothing but the candidate's capacity for cramming; certainly not his fitness to practice medicine. There can be no question that the licensing examination should be framed so as to distinguish between assimilated knowledge and that secured by cramming.

In addition to the usual oral and written examination, there should be a practical portion. Hospitals have long since been combining the practical with the theoretical examination in the selection of internes. In the regular licensing examinations in Europe, practical examinations are required, in addition to oral and written tests. In France practical tests are required in dissection, pathology, operative surgery, regional anatomy and midwifery, while in Germany practical tests are required in medicine, surgery, ophthalmology, pediatrics and nervous diseases, these tests sometimes covering as much as two or three weeks in time. Practical tests are, therefore, not a matter of experiment.

Possibly the division of the licensing examination into two or more parts, thereby allowing of more time to the subjects, would be beneficial. In Great Britain, as is well known, there are four separate examinations and in France five. At least three states, Maryland, Michigan and Indiana, allow their examinations to be taken in two parts, students at the end of their sophomore year being permitted to take examinations in the subjects contained in the first two years of the medical course, leaving the other required branches to be taken after graduation when the applicant comes up for his licensing examination.

MEDICAL EDUCATION IN THE UNITED STATES.

This number contains statistics bearing on medical education in the United States for the year ending June 30, 1907. The information was obtained direct from the medical colleges, from the annual announcements, from personal information and from other sources. It is through the kind courtesy and cooperation of the officers of the various medical colleges that we are able to present these complete statistics. Our thanks are due to the colleges for reports, the preparation of which has required much time and thought.

Decided advances in medical education have been made during the past year. A large amount of money has been secured for medical education and many new buildings, laboratories and hospitals have been built which have added materially to the facilities for the better training of students in medicine. The desire for higher standards has been manifested in all sections of the country. During the year some forty colleges have voluntarily raised the standard of entrance requirements above that of a four-year high school education, and three state examining boards have taken similar action.

On the other hand, there are a few things to regret. By this time it is certainly recognized that modern medicine can not be taught in the few brief hours from 7 to 10 o'clock at night to students already tired from their day's work, without mentioning the impossibility of providing clinical courses during those hours or the unsurmountable difficulties associated with the conduct

of a laboratory at night. Nevertheless, two new night schools have been organized, which would not have occurred if the chartering and control of medical colleges in all states were in the hands of the medical examining boards. With proper restrictions the organization and operation of low grade colleges can and should be checked.

Statistics of Colleges.—On pages 588 and 589 will be found Table 1, giving the states containing medical colleges, the name of each college, the population of the city in which the college is located, the number registered as students during the session of 1906-7, and also the graduates (men and women) of 1907, the total number of teachers in each college and the number of weeks in the college year. Beginning on page 576 we present, in abstract form, essential facts of all medical colleges arranged by states, and on pages 587 and 592 to 596 will be found the requirements of the regular, homeopathic and eclectic medical college associations, also lists of the colleges holding membership in these organizations.

Distribution of Medical Students.—The table on pages 590 to 593 shows the distribution of the students of each college by states. The influence of the proximity of the medical school is seen in the fact that states having medical colleges have more students in proportion to the population than those which have no colleges. Three states contributed over two thousand students, these being New York 2,324, Illinois 2,126, and Pennsylvania 2,085. Two other states, Missouri and Texas, contributed between one thousand and two thousand students each.

Number of Medical Students.—The total number of medical students (matriculants) in the United States for the year ending June 30, 1907, was 24,276, a decrease of 928 below 1906 and a decrease of 1,871 below 1905. Of the total number of students, 22,303 were in attendance at the regular schools, 1,039 at the homeopathic, 545 at the eclectic, 97 in the physio-medical and 292 in nondescript (unclassifiable) schools. The attendance at the regular schools shows a decrease of 813 below that of last year, a decrease of 1,816 below 1905 and a decrease of 2,363 below 1904. The number this year is the smallest since 1900. In the homeopathic school there was a decrease of 46 below the attendance of 1906, a decrease of 65 below 1905, there being a constant decrease since 1900. The eclectic schools show a decrease of 99 below last year, a decrease of 33 below 1905 and a decrease of 469 below 1904. The physio-medical colleges had 97 this year against 110 last year and 114 in 1905.

TABLE 3.—MEDICAL COLLEGE ATTENDANCE.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880.....	9,776	1,220	830	...	11,826
1890.....	13,521	1,164	719	...	15,404
1900.....	22,710	1,909	552	...	25,171
1901.....	23,846	1,683	664	224	26,417
1902.....	24,578	1,617	765	241	27,501
1903.....	24,930	1,498	848	339	27,615
1904.....	23,662	1,309	1,014	357	28,142
1905.....	24,119	1,104	578	346	26,147
1906.....	23,116	1,085	644	359	25,204
1907.....	22,303	1,039	545	389	24,276

Graduates.—The total number of graduates for the year ending June 30, 1907, was 4,980, a decrease of 384 below 1906, 626 below 1905 and 767 below 1904. The number of graduates this year is the lowest since 1890, when it was 4,454. For the year just closed the percentage of graduates to matriculants was 20.5 as compared with 21.3 in 1906. The percentage was 21.3 in 1905 and 30.3 in 1904. The number graduated from the regular schools was 4,591, or 250 less than in 1906, and the smallest number since 1902. From the homeopathic colleges there were 225 graduates, showing a decrease of 61 below last year and of 51 below 1905. The eclectic colleges graduated 121, a decrease of 65 below last year and of 32 below 1905. The physio-medical schools had only 5 graduates this year against 22 last year and 22 in 1905.

TABLE 4.—MEDICAL COLLEGE GRADUATES.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880.....	2,763	380	188	...	3,241
1890.....	3,853	380	221	...	4,454
1900.....	4,715	413	86	...	5,214
1901.....	4,879	387	148	...	5,444
1902.....	4,498	336	138	27	4,999
1903.....	5,088	420	149	41	5,698
1904.....	5,190	371	146	40	5,747
1905.....	5,126	276	153	51	5,606
1906.....	4,841	286	186	51	5,364
1907.....	4,591	225	121	43	4,980

Women in Medicine.—During the last year there were 928 women studying medicine, or 3.8 per cent. of all medical students, as against 3.5 per cent. in 1906. There were 211 women graduates this year, or 4.2 per cent. of all graduates. In 1906 there were 895 women students and 233 graduates, while in 1905 there were 1,073 women students and 219 graduates. Of all women matriculants, 210 (22.6 per cent.) were in attendance at the three medical colleges for women, as compared with 189 (21.0 per cent.) in 1906. From these schools there were 39 (18.5 per cent.) graduated, as compared with 33 (14.1 per cent.) graduated in 1906. The others matriculated in and were graduated from co-educational colleges.

TABLE 5.—WOMEN IN MEDICINE.

Year.	Total women students.	Percent. of all students, both sexes.	Total women graduates.	Percent. of grads., both sexes.	Women's colleges.	Students.	Percent. of all women students.	Graduates.	Percent. of all women graduates.	Co-ed. schools.	Students.	Percent. of women students.	Graduates.	Percent. of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.7	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5

Number of Colleges.—During the past year five medical colleges (mentioned on page 599) have ceased to exist. Two of these were closed, while three merged into other colleges. Five new schools are added to the list, which keeps the total of colleges at the same figure as last year, 161. The number of regular schools has increased by one, there being now 131. The homeopathic schools number 17, or one less than last year, and the

eclectic schools have one less than last year, the number now being 8. There are 3 physio-medical schools and 2 schools which are unclassifiable.

TABLE 6.—MEDICAL COLLEGES.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880.....	72	12	6	...	90
1890.....	93	14	9	...	116
1900.....	121	22	8	...	151
1901.....	124	21	10	4	159
1902.....	121	20	10	4	155
1903.....	121	19	10	4	154
1904.....	133	19	10	4	160
1905.....	129	18	9	4	160
1906.....	130	18	9	4	161
1907.....	131	17	8	5	161

Length of Terms.—The length of the terms of the same colleges fluctuate somewhat from year to year, but on the whole there has been a decided advance. According to reports from the colleges themselves, of those having less than 27 weeks of actual work exclusive of holidays, there are only 6 as compared with 14 last year. Of those having 27 or 28 weeks the number is 27 as compared with 35 last year. There are now 42 colleges claiming courses of 31 to 32 weeks of actual work, an increase of 10 over last year, and 29 schools having courses of 33 to 34 weeks, an increase of 5 over last year. Altogether 102 colleges have courses of over 30 weeks of actual work as compared with 86 reported last year.

TABLE 7.—COLLEGE TERMS.

	23 to 26 weeks.		27 to 28 weeks.		29 to 30 weeks.		31 to 32 weeks.		33 to 34 weeks.		35 to 36 weeks.		Ov. 36 weeks	
Year.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	38	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3

Location of Colleges.—Of the 152 colleges that have graduates, 97 are located in cities of 100,000 or greater population and these schools had 3,730 graduates, while the 55 schools located in cities of less than 100,000 population had 1,250 graduates. In cities of less than 50,000 population there are 36 colleges which had a total of 602 graduates, while 9 colleges having 220 graduates are located in cities which have less than 10,000 population.

Foreign Medical Colleges.—On page 596 is a list of foreign medical colleges. The information has been taken from the most authentic sources and we have endeavored to make the list complete. The original name has been given in order that those connected with medical colleges and examining boards may be enabled to recognize credentials from these schools.

High School Data.—Owing to the increasing interest in the preliminary education of medical students a few statistics are presented in Table 10 on page 595. This table will be worth study by those having to do with preliminary education.

LACK OF PUBLIC TOILET FACILITIES IN CITIES.

The lack of public toilet facilities in American cities has frequently been commented on. Some cities have followed European precedent and established public comfort stations. A recent example is Detroit, which has established a $15,000 comfort station, which is deservedly popular, averaging over 2,000 users a day. In Chicago the provision is very inadequate, but the fact that investigation is beginning is promise of better things. A recent investigation[1] by V. C. Hart, Jr., brought out the fact that the facilities which ought to be furnished by the city are provided by the saloons and the large office buildings. In the office buildings it is estimated that about one-third of the elevator service is occasioned by the use of the toilet rooms by outsiders. "Public buildings afford facilities of the most inadequate sort, miserably ventilated, meager in equipment and inconveniently located. Department stores, railroad stations, Y. M. C. A. buildings and restaurants were found to have poor or indifferent provision, while the churches have conditions very nearly the worst of all." Saloon-keepers estimate that toilet facilities increase their patronage more than their free lunch counters. There is no question of the need of better facilities in this respect. It is fitting that they should be provided at public expense, as in all other civilized countries, and their presence made known in an unobtrusive manner but so that the stranger will have no difficulty in finding them.

MECHANICAL PRESCRIBING IN HOSPITALS AND DISPENSARIES.

Labor-saving devices are as desirable in intellectual and professional life as in other forms of industry. The prescription itself is an evidence of this, and its abbreviations show the tendency of physicians to escape the labor of repeating words in constant use by employing symbols in their stead. The tendency to use one formula for a series of cases results from the same desire to avoid troublesome details, and the stock prescription for rheumatism or dyspepsia is as natural as the classification of symptoms into disease groups which makes it possible. The best managed hospitals have their standard tonics made up by the gallon, if not by the barrel, and prescribing in dispensaries is commonly slavishly confined to a formula book. The student soon learns that "Formula 38" is good for dyspepsia, and that "A. B. and S" pills are the remedy for constipation. It is unfortunately true that the prevailing tendency to rely on nostrums and specifics has its origin to a large extent in the use of formularies and ready-made mixtures in clinics, dispensaries and hospitals connected with medical schools. That some of the best men in the profession exhibit this tendency is not surprising when we know that a certain college, second to none in its advocacy of high ideals in medical education, still uses in its dispensary work a formulary book that has undergone little change in twenty years and which contains some beautiful examples of polypharmacy. While such a reliance on ready-made formulas may be a necessity of the busy doctor, it is certainly out of place in the

1. According to Charities and the Commons, Aug. 10, 1907.

teaching of students, where the underlying principles should always be kept in view and their intelligent application in detail carefully taught. The student, taught by the powerful example of great clinicians whom he sees daily using ready-made formulas, is in great danger of letting his lessons in pharmacology lapse into innocuous desuetude and of going into practice ready to exchange the ready-made formula of the dispensary or the clinic for the ever ready specific of the proprietary medicine man.

SNOBBERY IN FLAT OWNERS.

Some years ago there appeared some correspondence in the English medical journals in regard to the propriety of physicians yielding to the requirement of some patrons that they should use the area doors instead of the front entrance in making professional calls. We have not heard that any one ever succeeded in forcing this rule on the British medical profession. It seemed then hardly possible that a similar attempt to put physicians on the same grade as grocers' delivery boys and servants' visitors would ever be made in this country, but such appears to be the case. A Newark, (N. J.) physician, it is reported, has brought suit for $5,000 damages against the owner of a flat or apartment building who had made this rule and who attempted to prevent him using the front entrance, and the case is said to be arousing much interest in the medical fraternity of New York City, in certain parts of which like attempts to humiliate physicians are said to have been made. There can be but one opinion among sensible people in regard to such performances, but a consciousness of this fact will not justify a physician in submitting to them. Fortunately in most parts of this country we do not have to deal with this kind of snobbishness, but we can sympathize with those who have to contend with it. It is to be hoped that the Newark physician will obtain full damages—they should be exemplary.

SOME EXAMPLES OF THE NEED OF VACCINATION.

There is some material in a recent bulletin of the Department of Health of the City of Chicago which we commend to the antivaccinationists. With regard to smallpox conditions in Chicago during the preceding week the bulletin for July 20, 1907, says: "Four cases of smallpox were sent to the Isolation Hospital during the week of July 13. One patient was an unvaccinated sister of a woman sent to the hospital a week previous. Another was an unvaccinated man from Indianapolis, who saw a case 'just like his' on the car on which he was traveling just two weeks before the eruption appeared on his face. Another is an unvaccinated man from La Grange, Ill., where he wandered about for ten days after he was attacked with the disease." Many and various reflections with regard to the vaccination delusion and the effects of compulsory vaccination may be made on this paragraph. Of the four patients reported from a population of over 2,000,000 three were unvaccinated. Considering how much the number of vaccinated people who had been exposed, nearly if not quite as much as these unfortunate victims of the disease, exceed the unvaccinated, it would be interesting to know why such a large proportion of the unvaccinated were picked out to be the next victims. One of the unvaccinated patients had seen a person evidently suffering from smallpox, as the sequel showed, in a car in a neighboring city. So far as is known, he is the only one who caught the infection, though so many others were exposed. There are few who without the protection of vaccination care to think of that unvaccinated man from La Grange, who wandered about for ten days after being attacked with smallpox, exposing ever so many people to the danger of infection. If we are sure of the recency of our vaccination we can contemplate the possibility of exposure to smallpox with comparative equanimity.

Medical News

ALABAMA.

In Memory of Killebrew.—The Mobile County Medical Society held a special memorial meeting July 27 in honor of its late president, Dr. James B. Killebrew, and passed resolutions setting forth the sterling qualities of the deceased and the loss sustained by his death.

New College Building.—The contract for the erection of an addition to the east wing of the building of the Medical Department of the University of Alabama, Mobile, has been let. The last legislature appropriated $15,000 for the remodeling of the old building and the erection of the addition. The work will begin at an early date.

Typhoid.—An epidemic of typhoid is said to exist at Tuskegee Normal School, where 27 cases, with 2 deaths, have been reported.——Dr. Robert B. Harkness, health officer of Birmingham, reported to the Jefferson County Medical Society July 29, that, while there were a number of cases of typhoid in one locality of the city, there was nothing like an epidemic. The society passed a resolution thanking the city health officer for his defense of the health of the community.

ARKANSAS.

To Get Evidence.—Because of the alleged neglect of trainmen to enforce the provisions of the state anti-drumming law, the Garland County Medical Society will, it is reported, employ detectives to travel on trains and gather evidence against trainmen who do not eject drummers from their trains, and also evidence against drummers themselves.

Reorganization of Medical Board.—The Arkansas Medical Board at its annual meeting reorganized and re-elected Dr. M. L. Norwood, Lockesburg, president; Dr. Fred T. Murphy, Brinkley, secretary, and elected Dr. Montague Fink, Helena, vice-president, and Dr. George V. Poyner, Green Forest, treasurer. Dr. John W. Meek, Camden, has resigned as a member of the board, and Dr. Robert A. Hilton, El Dorado, has been named to succeed him.

CALIFORNIA.

Unlicensed Practitioners Convicted.—G. W. Chan, a Chinese herb doctor, of Los Angeles, was found guilty July 30 of practicing medicine without a license.——Dr. M. V. McGilvra, an osteopath of Los Angeles, is said to have been found guilty of practicing medicine without a license.

City Surgeons Under Civil Service.—The board of health of San Francisco has decided that hereafter surgeons of emergency hospitals must procure their position through civil service and positions may be held two years. In case of vacancy in the office of chief surgeon the vacancy will be filled by the board of health from the surgeons on duty.

In the Hands of the Law.—Dr. Charles V. P. Watson, Los Angeles, accused of having caused the death of Florence Grover by the performance of a criminal operation, was discharged on the ground that the evidence adduced was insufficient for conviction.——In the suit of W. C. Reed against Dr. J. E. Wilson, Huntington Beach, for alleged malpractice, the judge found for the defendant.

Board Sustained.—The Supreme Court on July 8 handed down a decision sustaining the action of the State Board of Medical Examiners in refusing a license to practice medicine to James T. Arwine, Los Angeles. The plaintiff had presented a diploma from a medical college in Tennessee and licenses to practice in Indiana and in the District of Columbia, but did not take the examination as required by law.

Personal.—Dr. James T. Watkins has been appointed health officer of San Francisco.——Dr. Henry J. B. Wright has been elected secretary, and Dr. Charles H. Walter, president and health officer of San José.——Dr. Edward R. Taylor has been selected as mayor of San Francisco.——Dr. George Berks, Fresno, sailed for Europe, July 27.——Dr. Oliver D. Hamlin, Oakland, returned from Europe July 27.——Dr. Ed W. Hanlon, Marysville, has been appointed assistant to the Van Orden clinic, Vienna.

CONNECTICUT.

Commencement.—At the ninety-fourth annual commencement exercises of Yale Medical School the address was delivered by Dr. Frederick C. Shattuck of Harvard, and a class of 28 was graduated.

Personal.—Prof. William H. Brewer has been elected president of the State Board of Health. Dr. Arthur J. Wolff, Hartford, has succeeded Dr. Seldom B. Overlock, Pomfret, as a member of the board.——Dr. Louis I. Mason, South Coventry, sustained severe cuts and bruises in an automobile wreck, July 29.

Appropriation for Tuberculosis.—The legislature has voted to allow $40,000 for the tuberculosis work of Hartford Hospital.——Dr. John P. C. Foster, New Haven, has been named as chairman, and Drs. Omer La Rue, Putnam, and Stephen J. Maher, New Haven, members of the commission appointed to investigate the spread and prevention of tuberculosis in the state.

DISTRICT OF COLUMBIA.

Medical Literary Bureau.—On account of the death of Mr. Aubrey M. Skiles, manager of the Medical Literary Bureau, Washington, the bureau has been temporarily suspended, pending reorganization.

GEORGIA.

Roof Ward on Hospital.—An open-air ward is being prepared on the roof of the Macon City Hospital. The new ward will have accommodation for eight patients.

Personal.—Dr. R. V. Martin, Savannah, has been commissioned first lieutenant and assistant surgeon in the National Guard of Georgia and assigned to duty with the First Infantry.——Dr. A. S. Bacon, Albany, has returned from Europe. ——Dr. Clyde D. Elder, Marietta, was severely injured in a runaway accident July 30.——Dr. J. D. S. Fairey, president of the board of health of Augusta, has resigned.

ILLINOIS.

Tuberculosis Society Wants Site.—The officers of the Peoria Society for the Prevention of Tuberculosis are endeavoring to purchase or lease a site for a tent sanatorium on the Upper River or on the Galena road. It is estimated that there are at least 100 persons in the city suffering from tuberculosis, many of whom would be glad to pay for care and treatment in such an institution.

Births Must be Reported.—The State Board of Health, in a recent bulletin, calls attention to the fact that the law provides a fine of not less than $1 nor more than $100 for failure to report births, and suggests that concerted action on the part of state's attorneys, whereby all violators would be prosecuted, would render indifference to this particular law an exceedingly expensive matter to many physicians.

Personal.—Dr. William E. Chalstran, Lane, who recently lost his sight, has been taken to his home in Galesburg, after treatment in Chicago for several weeks.——Dr. Howard A. Wharff, Edwardsville, has been made a member of the staff of physicians of a nose, ear and throat hospital in St. Louis, and assistant to Dr. Max A. Goldstein.——Dr. Joseph DeSilva, Rock Island, has been appointed a trustee of the State Institution for the Feeble-Minded, Lincoln, vice Dr. John Wagner, McLean, resigned.——Dr. Ernest C. Gwinn, Sadorus, suffered severe contusions and a sprain of the back, in a runaway accident July 25.——Dr. John R. Webster, Monmouth, is reported to be seriously ill at the home of his son in Chicago.

Chicago.

Personal.—Dr. William J. Butler has returned after three months abroad.——Dr. Joseph P. Smyth has been elected high medical examiner of the Catholic Order of Foresters.——Dr. Eugene S. Talbot was elected first honorary president of the International Stomatological Congress, which met in Paris, France, August 8.

Dowdall Convicted.—Edward Dowdall, who was convicted a few days ago of misrepresentation regarding the examinations of the State Board of Health, was sentenced on August 9 to a year's imprisonment, the limit provided by the law. He was also tried on the charge of practicing medicine without a state license, found guilty and a fine of $100 and costs assessed against him.

Deaths of the Week.—The mortality for the week ended August 10 was 646, an increase of 143 over the previous week and of 43 over the corresponding week of last year. Acute intestinal diseases caused 176 deaths; consumption, 63; nephritis, 47; heart diseases and violence (including suicide), each 39; pneumonia, 38, and cancer, 30. Scarlet fever headed the list of communicable diseases with 13 deaths, followed by typhoid fever with 10, diphtheria with 6, whooping-cough with 3, and measles and influenza, each with one death.

INDIANA.

Free Antitoxin.—The State Department of Health is now prepared to furnish diphtheria antitoxin to the poor, when the blanks are properly filled out and presented at any drug store. The bills will be paid by the township trustee.

Communicable Diseases.—Seven cases of diphtheria have appeared in Buck Creek Township, with one death.——At Lansing, near Hammond, whooping-cough is reported to be epidemic, and 21 cases have been reported, with one death.——At Arthur 8 or 10 cases of smallpox of serious type are reported. ——The epidemic of measles in Muncie has subsided. During its progress 1,347 cases were reported.

Personal.—Drs. Adolph F. Schultz and James M. Dinnen have been appointed surgeons to the Fort Wayne Electric Company, vice Dr. Maurice Rosenthal, resigned.——Dr. George G. Graessle, Seymour, was taken to Indianapolis for operation, August 1.——Harold O. Ruh, Bloomington, has received $250 from the Rockefeller Institute for Medical Research for continued investigation on phagocytosis in the pathologic laboratory of Indiana University.——Dr. Louis W. Tennant, Larwill, has been seriously ill with renal colic.——Dr. John J. Baker, Indianapolis, has been appointed chief surgeon of the Indianapolis, Crawfordsville & Western Traction Company.—— Dr. Harvey J. Clements, Converse, has accepted a chair in Willamette University, Salem, Ore.

IOWA.

Mason City Hospital.—The Sisters of Mercy of Duluth have agreed to take charge of the new hospital to be erected in Mason City and have also agreed to contribute $30,000 toward the cost of the building. Mason City is to furnish the remainder of the $50,000 required and a site for the institution.

College Merger.—The Sioux City College of Medicine will, it is reported, partially affiliate with Morningside College, beginning with the work of this year. W. W. Scott, professor of chemistry at Morningside College, has been appointed to a similar position in the medical college. T. C. Stevens, professor of embryology, will have charge of the classes in this subject at the institution.

Work of the State Laboratory.—Dr. Henry Albert, director of the State Board of Health bacteriologic laboratory, Iowa City, in his annual report, states that during the year 8,456 examinations were made, of which 3,853 were for diphtheria, 2,599 for tuberculosis, 711 for typhoid fever and 693 miscellaneous. There are now 720 culture stations of the State Board of Health. During the year these stations have been supplied with 15,753 diagnosis outfits, of which 7,084 were for diphtheria, 2,567 for typhoid fever and 6,102 for tuberculosis.—— The *Iowa Health Bulletin*, the official organ of the State Board of Health appeared in a new, distinctive and attractive form, beginning with the July issue.

Personal.—Dr. Louis A. Thomas was appointed secretary of the State Board of Health, at its meeting, July 19.——Drs. Fred W. Powers, Waterloo, and Louis A. Thomas, secretary of the State Board of Health, have been appointed members of a committee to examine and pass on applicants for certificates as graduate nurses.——Dr. Wilbert E. Harriman, Ames, has gone to Colfax for treatment at the springs.——Dr. Samuel H. Watson, Blairstown, is taking preventive treatment for hydrophobia at the Pasteur Institute, Chicago.——Dr. J. H. Farrell, Winthrop, has been appointed assistant physician at Maui, Hawaii.——Dr. E. W. Meis, Sioux City, has been appointed city bacteriologist.——Dr. Burton Howell, has been appointed

assistant in obstetrics to the State University Medical Department.——Dr. Wilhelm J. Jepson, Sioux City, has been commissioned as major and surgeon of the Fifty-sixth Infantry, Iowa National Guard, vice Dr. Donald Macrae, Council Bluffs.

KANSAS.

Itinerant Medicine Venders Licensed.—The last legislature passed a law providing for a license of $50 a year for itinerant medicine venders. The licenses are for "itinerant venders of drugs and medicines," and give permission to sell "drugs, medicines, nostrums, ointments or appliances of any kind for the treatment of any disease, injury or bodily defect."

Tuberculosis Treatment in Penitentiary.—A tent has been erected in the prison farm of the State Penitentiary, Lansing, to which 14 of the more severe cases of tuberculosis among the convicts have been transferred, and already the patients are said to be gaining in weight and strength. It is said that Kansas is the first state to give convicts open-air treatment for tuberculosis.

Personal.—Dr. Cyrus E. Hunt, Eldorado, has been elected secretary of the Butler County board of health.——Dr. Samuel C. Emley, Lawrence, has been appointed physician of the University of Kansas.——Dr. Aloin Schellack has been appointed deputy health officer for Eudora and vicinity in Douglas County.——Dr. Wilson R. Priest, Concordia, has been elected grand medical director of the Fraternal Aid Association.

KENTUCKY.

Epidemic Diseases.—Typhoid is said to be epidemic at Owensboro, Auburn, Glasgow and Booneville.——An epidemic of smallpox is said to exist at Yocum Creek, Morgan County, where more than 30 cases are reported.

Anti-Tuberculosis Association.—The Kentucky Anti-Tuberculosis Association has moved into its new quarters at 119 West Chestnut Street, Louisville. The association has already treated 49 patients in their homes, has supplied milk to 15 patients, and has furnished a tent to one man who wishes to live out of doors.

Illegal Sale of Cocain.—The Kentucky State Board of Pharmacy has called the attention of the secretary of the State Board of Health to the need of cooperation in the campaign against illegal sale of cocain. The Kentucky Board of Pharmacy has, it is said, been greatly handicapped in its work by some physicians who have not only been prescribing cocain, but have prepared powders composed largely of cocain, which they have sold to their patients who are addicted to the use of it. Dr. J. N. McCormack, secretary of the State Board of Health, has promised the board of pharmacy its hearty support. Five Louisville druggists have already been indicted for selling cocain without a prescription.

Registration of Births.—A warrant was recently taken out against Dr. John Goodman by Health Officer Allen of Louisville because Dr. Goodman had failed to report a birth to the health office. Dr. Goodman, through his attorney, held that the ordinance under which he had been arrested, which provides for the report to the health office of every birth at which a physician is in attendance, was invalid because the general council, in making the ordinance a law, exceeded its power under the charter given the city by the state. The defense was granted the privilege of submitting briefs on the question involved. Dr. Goodman admitted not having given the information required, and stated that he had not done so because, previously he had often reported births, which were later printed in the papers. He said that the ordinance he was charged with violating provided that no publicity should be given births, and that the records should be used merely for statistical purposes. Hence, he decided not to give the information to the health officer. The assistant city attorney said, in defense of the statement that the papers sometimes printed the births, that it was no fault of the health office, as they did not send them to the papers, but that they were put into records to which the newspapers had access and which the health office had no authority to keep from the public.

Graduations.—A class of 94 was graduated at the annual commencement exercises of the University of Louisville, Medical Department, August 1. T. L. Burnett, LL.D., president of the board of trustees, conferred the degrees, and Dr. Joseph B. Marvin awarded the honors.——At the fifty-eighth annual commencement exercises of the Kentucky School of Medicine, held in Louisville, July 12, a class of 64 was graduated. The degrees were conferred by John H. Leathers. Dr. William A. Wathen, dean of the college made the annual address. Dr. Fouche W. Samuels delivered the baccalaureate address, and Dr. William H. Warren announced the honors.——On July 30 the Hospital College of Medicine, Louisville, graduated a class of 94. Dr. Philip R. Taylor, dean of the college, presented the diplomas, and Dr. J. A. Rush delivered the valedictory address.

Personal.—Dr. Jefferson D. Robertson, Paducah, was overcome by heat in front of his office, July 20.——Dr. Robert E. Gatz, Louisville, suffered the loss of his laboratory by fire, July 16.——Dr. Ellis Duncan, Louisville, has been made coroner of Jefferson County, vice Dr. Harris Kelly.——Dr. Heman Humphrey, Louisville, has been named by the board of public safety as city physician of the East district, vice Dr. Llewellyn P. Spears, resigned.——Dr. Samuel P. Myer and W. J. Young have been appointed to positions in the Louisville health department.——Dr. George E. Davis, Lawrenceburg, will leave for Europe this month.——Dr. Benjamin T. Hall, Paducah, fell August 2 and injured his left knee.——Dr. John K. Wood has been appointed assistant physician at the Central Kentucky Asylum for the Insane, Lakeland.——Dr. S. Johnson Hall, Louisville, was operated on for the removal of gallstones, August 2, at the Norton Infirmary.——Dr. William A. Keller has been reappointed assistant physician for the west district of Louisville, and Dr. Meverell K. Allén has been appointed health officer for the city.

LOUISIANA.

Will Admit Women.—The Tulane University, Medical Department, announces that provided 10 women present themselves for matriculation at the next session, which begins in October, the privileges of the college will be extended to them.

Personal.—Dr. Thomas S. Jones has been elected president of the board of health of Clinton.——Dr. John G. Martin, Lake Charles, has been appointed a member of the State Board of Health, vice Dr. A. Feltus Barrow, St. Francisville, term expired.——Dr. Robert W. O'Donnell has been elected president, and Dr. Charles C. Cage, sanitary inspector of the board of health of Monroe.——Dr. and Mrs. Latzi L. Szabary, New Orleans, have sailed for Europe.

Tuberculosis.—The Louisiana Anti-Tuberculosis League announces that it will immediately begin the construction of a sanatorium in St. Tammany parish. The plans for the sanatorium comprehend a group of small cottages in a semicircle on a 50-acre tract, near the town of St. Tammany. They will be built according to the most scientific plans and will soon be ready for occupancy.——The city board of health of New Orleans on July 9 adopted a rule making it compulsory to report cases of tuberculosis. A circular letter has been sent to all physicians in the city, urging them to comply with the requirement of the board.

MAINE.

Fogg Memorial Library.—The William Fogg Memorial Library, in memory of the late Dr. John H. Fogg, was recently dedicated at Eliot. The library building is situated on the old Fogg farm, one of the most prominent sites in the town.

Personal.—Drs. Ernest F. MacVane, Long Island, and Magnus G. Ridlon, Kezar Falls, have been appointed house physicians of the Maine Eye and Ear Infirmary, Portland.—The office of Dr. John C. Rogers, Pembroke, was destroyed by fire July 4.

Society Meeting.—At the annual meeting of the Kennebec County Medical Society, held July 25 in Augusta, the following officers were elected: President, Dr. George R. Campbell, Augusta; vice-president, Dr. Theodore E. Hardy, North Vassalboro; secretary-treasurer, Dr. Wellington Johnson, Augusta, and executive committee, Drs. Howard A. Milliken, Hallowell; Percy S. Merrill, Waterville, and Alton Sawyer, Gardiner.

MARYLAND.

Baltimore.

Personal.—Dr. J. N. Reik sailed for Europe August 7.——Dr. Harry Gross has gone to Europe.——Dr. H. Barton Jacobs is visiting Dr. William Osler in Oxford, Eng.——Dr. Albertus Cotton was recently operated on for appendicitis at the Baltimore City Hospital.

The Howard Estate.—By the will of the late William T. Howard his estate is equally divided between his wife and his brother's family, who live at Richmond, Va. At the death of his wife her portion is to go to his brother's family. The estate is valued at about $175,000. The library and the gynecologic instruments of Dr. Howard are bequeathed to the University of Maryland.

MASSACHUSETTS.

Personal.—Dr. Emma W. Mooers, formerly assistant in pathology at the McLain Hospital, Waverley, has accepted a posi-

tion as assistant instructor in the psychiatric clinic, Munich, under Prof. Dr. Kraeperlin.——Dr. George H. Finch, Springfield, was operated on for appendicitis at the House of Mercy Hospital, August 1.

Consumption and Whooping-Cough Added to List.—By direction of the State Board of Health, consumption and whooping-cough have been added to the list of diseases dangerous to public health.

Diphtheria.—The prevalence of diphtheria is causing alarm at Hamilton and Wenham, where nine cases have been reported.——Several cases of scarlet fever have also occurred.

MINNESOTA.

Personal.—Dr. John A. Vieregge, St. Paul, sustained severe bruises in a collision between his buggy and an automobile, July 23.——Drs. Seller J. Aspelund and Henry Goehrs, Minneapolis, have been appointed assistant city physicians.——Dr. Walter J. Marcley, superintendent of the Minnesota State Sanatorium for Consumptives, Walker, has assumed charge of the institution.

Fight Against Tuberculosis.—Dr. Harry A. Tomlinson, superintendent of the St. Peters State Hospital, is at the head of a movement against tuberculosis. Facilities for the scientific treatment of patients suffering with tuberculosis are to be given to the medical staff at St. Peter's Hospital. The appropriation voted by the last legislature will be used in constructing and equipping a ward in which consumptives may be cared for and the open-air treatment employed. The new pavilion will have accommodation for 60 patients.

Society Meetings.—At the sixteenth annual meeting of the Southern Minnesota Medical Association, held in Rochester, August 11, the following officers were elected: President, Dr. Charles O. Cooley, Madelia; vice-presidents, Drs. Frederick H. Rollins, St. Charles, and George L. S. Schultze, Owatonna, and secretary-treasurer, Dr. William T. Adams, Elgin. Owatonna was selected as the next meeting place.——At the annual meeting of the Wabasha County Medical Society, held in Plainview, the following officers were elected: President, Dr. John P. Dougherty, Wabasha; vice-president, Dr. Henry T. McGuigan, Mazeppa, and secretary-treasurer, Dr. William F. Wilson, Lake City. Lake City was selected as the place for the next meeting.

Requirements for Cars.—The Minnesota State Board of Health is insisting on the strict enforcement of the sanitary regulations. The regulations of the board include that no person shall spit on the floor, furnishings or equipment of any railway coach, depot or depot platform in the state. Railways are required to furnish an ample number of spittoons for the cars. When a water-borne disease has developed in epidemic form, water for car tanks from that locality shall not be used without the approval of the board. The drinking water and ice supply of coaches must contain no deleterious ingredients. All day coaches must be cleaned once each day or at the end of a trip, and coaches in which persons afflicted with contagious diseases have been carried must be closed, and remain closed and unoccupied until they have been thoroughly disinfected.

MISSOURI.

Unlicensed Practitioners.—Assistant Health Commissioner William B. Winn, St. Louis, has filed charges against six physicians on charges ranging from misdemeanor to felony. He states that there are about 75 physicians in the city practicing without a license. Some of these he says are not registered, but hold certificates under the names of physicians who have been dead for several years.

Society Meeting.—At the annual meeting of the North Missouri Medical Association, held at Gallatin, the following officers were elected: President, Dr. James Hanks, Brashear; vice-presidents, Drs. Isaiah Knott, Jr., Keytesville, and David F. Hanna, Gallatin; corresponding secretary, Dr. Ezra C. Grim, Kirksville; recording secretary, Dr. Oliver McEwen, Shannondale, and treasurer, Dr. Robert Haley, Brookfield.

Tuberculosis Notes.—The board of managers of the State Sanitarium for Incipient Tuberculosis, Mount Vernon, the new addition to which was opened August 1, elected Dr. William Porter, St. Louis, medical director, and Dr. Orville H. Brown, St. Louis, physician in charge.——Drs. Andrew J. Detweiler and John J. Bourn, Hannibal, have been appointed consulting physicians to receive applications for the new state hospital for tuberculosis, Mount Vernon.——A branch of the Society for the Relief and Control of Tuberculosis is being formed at Kansas City under the temporary direction of Drs. Walter M. Cross, Edward L. Stewart and Edward W. Schaffler.——Mrs. Grace Leattle has announced her intention to give $200,000 to the St. Louis Society for the Prevention and Relief of Tuberculosis.

NEW JERSEY.

Personal.—Dr. Samuel English, Camden, has been appointed medical superintendent of the new State Tuberculosis Sanitarium at Glen Gardner and will begin his new duties at once.——Dr. J. Bart Webster, Atlantic City, sailed for Europe, August 11.

Bogus Doctors in Atlantic City.—It is reported that the physicians of Atlantic City have united to drive out bogus doctors and illegal practitioners. During the height of the season there is a large influx of these individuals from Philadelphia and New York City. An appeal has been made to Dr. John W. Bennett, Long Branch, secretary of the State Board of Medical Examiners, to take some measure to drive these men from the city.

NEW YORK.

Personal.—Dr. William W. Jones has been elected physician for the Second ward of Rome, vice Dr. Albert E. Dietrich, resigned.——Dr. Moses A. Stivers, Middletown, has been commissioned captain and assistant surgeon, N. G. N. Y., and assigned to the First Infantry, and Dr. Arthur S. Moore has succeeded him as surgeon of Company I.——Dr. F. G. Schaible, Albany, has been appointed assistant physician at the Manhattan State Hospital.

State Food Tests.—State Commissioner of Health, Dr. Eugene H. Porter, announces that the analysis of food products has shown improvement in the second months' tests. During June 14 samples of various kinds of canned meats were found to contain boron preservatives. In July samples of as many of these same 14 brands as the department could find on sale were again submitted to tests, and of nine that were purchased but one showed the presence of boron preservative. The Department of Health is also testing oils used for illuminating or heating purposes to determine whether they come up to the required standard, which specifies that they must not flash at a temperature below 100 F.

New York City.

New Jewish Hospital.—Plans have been filed for remodeling two three-story houses into a hospital, at an estimated cost of $10,000.

Personal.—Dr. Stephen G. Cook, the oldest police surgeon of Brooklyn, has resigned, the resignation to take effect August 20.——Dr. and Mrs. Eugene Fuller sailed for Europe, August 7.

Contagious Diseases.—There were reported to the sanita y bureau for the week ending August 3, 354 cases of tuberculosis, with 163 deaths; 313 cases of measles, with 30 deaths; 220 cases of diphtheria, with 26 deaths; 157 cases of scarlet fever, with 18 deaths; 84 cases of typhoid fever, with 9 deaths; 24 cases of whooping-cough, with 12 deaths; 13 cases of cerebrospinal meningitis, with 15 deaths, and 8 cases of varicella, a total of 1,173 cases and 273 deaths.

Increase in the Death Rate.—During the two weeks ended Aug. 3, 1907, there were 3,615 deaths, and for the same period in 1906 there were 2,907, an increase of 708. During the week ended August 3 there were 1,804 deaths in the five boroughs; 1,653 of these were in children under 5 years of age. In the same week of 1906 only 1,156 children under 5 years died. Of the deaths during the week 546 were of children from diarrheal diseases, against 342 during the corresponding week of 1906.

Deputy Police Commissioner and the Coroners.—Deputy Police Commissioner O'Keefe recently issued an order to the police not to allow any one to touch or move a body in a suspicious case before a detective arrives. The board of coroners held a formal meeting and refused to allow such an order to include them, and announced that if a policeman interferes with them in the pursuit of their duties he will be subject to arrest, in accordance with Section 1776 of the New York City Consolidation Act.

NORTH CAROLINA.

Personal.—Dr. Frederick K. Cooke, Wake Forest, has removed to Asheville to practice.——Dr. Thomas R. Little, Greensboro, was successfully operated on for appendicitis a few days ago.——Dr. Arthur T. Pritchard, Asheville, has been appointed assistant surgeon of the Southern Railway.——Dr. Zeb M. Caveness, Wakefield, was stabbed by a drunken man July 10, but was only slightly wounded.——Dr. C. A. Shore, Winston-Salem, has been made director of the State Labora-

tory of Hygiene, vice Dr. McCarthy.——Drs. Edward C. Register, Charlotte, and David T. Tayloe, Washington, have been appointed members of the State Board of Health, to succeed Drs. William P. Ivey, Lenoir, and James A. Burroughs, Asheville.——Dr. Jacob F. Highsmith, Fayetteville, announces that he will withdraw from general practice September 1, and will devote his attention to surgery and gynecology.

NORTH DAKOTA.

Personal.—Dr. A. J. McCannel has been appointed health officer of Minot, vice Dr. Samuel G. White, removed to Anamoose.——Dr. Frederick H. Bailey, Fargo, has recovered from his recent operation for appendicitis.——Dr. Eduard Lohrbauer, Lakota, has been appointed coroner of Nelson County, vice Dr. William L. Cowper, Michigan.

Flaw in Vital Statistics Law.—Owing to an oversight on the part of the state legislators the work of compiling the vital statistics of the state may have to be discontinued. At the last session of the legislature a vital statistics law was passed the changes in which, from the old law, involved at least a double amount of stationery, but no provision was made for funds to cover the extra supplies needed.

PENNSYLVANIA.

Bequests.—By the will of the late Mrs. Lydia Hickman of West Chester, the Chester County Hospital and the Wentworth Home receive $500 each.

Filtered Water for Reading.—It is stated that at the next meeting of the city's council an ordinance will be introduced to be submitted to vote in November, including a proposal to borrow $500,000 for the enlargement of the filtration plant.

Philadelphia.

Fire in Kirkbride's.—Fire broke out in the laundry and lighting plant of the Pennsylvania Hospital for the Insane, August 10, and the laundry building was entirely destroyed, with a loss exceeding $20,000.

Health Report.—The total number of deaths reported for the week ended August 3 was 537, a decrease of 69 from the preceding week and an increase of 18 over the number reported in the corresponding week of 1906. The principal causes of death were: Typhoid fever, 9; diphtheria, 10; meningitis, 5; consumption, 58; cancer, 22; apoplexy, 6; heart disease, 34; acute respiratory disease, 33; enteritis, 18; hepatic cirrhosis, 10; appendicitis, 4; Bright's disease, 38; congenital debility, 18; suicides, 8; old age, 9; accidents, 13, and marasmus, 13. There were 126 cases of contagious disease reported, with 18 deaths, as compared with 118 cases and 15 deaths reported in the previous week.

SOUTH CAROLINA.

Personal.—Dr. Julius H. Taylor, Columbia, has been appointed local surgeon for the Southern Railway.——Dr. Charles A. Simpson has been designated health officer of Greenville until the regular election.

Medical Scholarships.—Governor Ansel has named the following beneficiaries for scholarships in the South Carolina Medical College for the ensuing year: First district, Marion C. Palmer, Charleston; second district, Richard W. Hughes, Hampton; third district, J. H. Pratt, Ninety-Six; fourth district, D. D. Alexander, Spartanburg; fifth district, Ralph K. Foster, Lancaster; sixth district, E. Theron Kelley, Darlington, and seventh district, D. Socrates Keisler, Summit.

TEXAS.

Prohibit Distribution of Medical Samples.—The city attorney of Waco has been instructed to submit an ordinance prohibiting the distribution of medical samples in that city.

Infirmary Dedicated.—The new addition to the St. Joseph's Infirmary, Fort Worth, recently erected at a cost of $85,000, was formally dedicated July 7. The new building contains 110 rooms and will accommodate nearly 200 patients.

Medical College.—A four-story building for the Medical Department of Baylor University is to be erected at Dallas on the site of the Baptist Memorial Sanatorium. The structure will cost about $30,000 and is to be completed by October 1.

Dengue at Brownsville.—The U. S. P. H. and M.-H. officer at Brownsville reported 300 cases of dengue fever in that place, July 25. On July 28 he reported that no further increase had occurred and that the cisterns had been ordered to be oiled and screened.

Ban on Consumptives.—The state health officer announces that the governor will shortly issue a proclamation declaring tuberculosis to be a contagious disease, and making it a statutory offense punishable by a fine of $500 to bring a person afflicted with the disease into the state.

Personal.—Dr. Amos C. Walker, Fort Worth, has recovered from the operation recently performed on him in Chicago.——Dr. Edward M. Thomas, Georgetown, has resigned as physician of Williamson County.——Dr. J. B. Bauguss, Heidenheimer, fractured his right leg above the ankle in a runaway accident, July 15.

No Medical Law.—It has been discovered that in the acts of the thirtieth legislature the medical law was repealed on July 12 and the board existing thereunder went out of existence and was deprived of its function. As the governor has not appointed a board under the new law and has until September 1 to do so, a hiatus has been existing since July 12 and will continue until the new board is appointed. In the meantime there can be no examinations nor can licenses be issued to practice medicine in the state.

State Anatomic Board Organizes.—The State Anatomic Board, provided for by the last legislature, consisting of a professor of surgery or anatomy from each medical college in the state, met in Austin, July 17, for organization, and Dr. John B. Smoot, Dallas, was elected temporary chairman. In the permanent organization Dr. Ira C. Chase, Fort Worth, was elected chairman; Dr. William Keiller, Galveston, secretary, and the president, secretary and Dr. Harold M. Doolittle, Dallas, were elected as executive committee. The law provides for the use of unclaimed dead bodies by medical colleges. The distribution of anatomic matter began about August 1.

VIRGINIA.

Tuberculosis Exhibit.—At the tuberculosis exhibit in the new Social Economy building at Jamestown, which was formally opened July 6, the initial address was made by Dr. Livingston Farand, New York City, on "The Campaign Against Tuberculosis."

Surgical Personals.—Dr. George C. Hoge, Unison, received an accidental gunshot wound of the leg at Washington, July 26. He was taken to the Emergency Hospital, where his wound was found to be not serious although painful.——Dr. Edward H. Claud, Portsmouth, was operated on for appendicitis, July 25, at St. Christopher's Hospital, Norfolk.——Dr. Samuel E. Hughes, Danville, was operated on for appendicitis at the General Hospital, July 29.

Society Meetings.—At a meeting of the Rappahannock Medical Society, held in Fredericksburg, Dr. Joseph N. Barney, Jr., Fredericksburg, was re-elected president, and Dr. William J. Chewning, Fredericksburg, secretary.——At the eleventh semi-annual meeting of the Southwest Virginia Medical Society, held at Marion, July 17 and 18, the following officers were elected: President, Dr. Albert S. Priddy, Marion; vice-presidents, Drs. W. K. Vance, Bristol, Tenn., and T. M. Cherry, Glamorgan; secretary-treasurer, Dr. Peyton B. Green, Wytheville. The next meeting will be held in January at Roanoke.——At the fourth annual meeting of the South Piedmont Medical Society, held in Chase City, July 16, the following officers were elected: President, Dr. Floyd J. Gregory, Keysville; vice-presidents, Drs. Samuel Lile, Lynchburg; W. Macon Smiley, Houston, and Luther A. Robertson, Danville; secretary, Dr. George A. Stover, South Boston (re-elected), and treasurer, Dr. James L. Kent, Lynchburg (re-elected). Dr. Stuart McGuire, Richmond, who was the guest of honor of the society, gave an address on suppurative peritonitis.

WEST VIRGINIA.

Personal.—At the annual meeting of the State Board of Health, Dr. Joseph E. Robins, Claremont, was elected president and Dr. Hugh A. Barbee, Point Pleasant, was re-elected secretary. Seventy applicants for license appeared and were examined.——Dr. John C. Cook, Fairmont, jumped from a buggy to avoid a collision with a train in Grafton and sustained a severe sprain of the ankle.——Dr. W. C. McGuire, Huntington, has been commissioned executive health officer of Cabell County and president of the county board of health.

Local Anti-Tuberculosis Association.—The West Virginia Anti-Tuberculosis League has been chartered with a capital stock of $1,000 by Drs. Daniel Mayer, Charleston; Hugh A. Barbee, Point Pleasant; Richard T. Davis, Charleston, and Wallace H. Longstreth, Terra Alta. The object of the league is: "To furnish information, instruct and teach ways and means of preventing tubercular infection and raising the standard of physical resistance; to arrest the progress of and to effect cures in those who are now or may be infected with tuberculosis; to encourage the establishment of state, public and private sanitariums in West Virginia, and to centralize

cooperative efforts by organizing local, county and municipal leagues, to be under the immediate management of competent professional counsel, thus enabling unfortunate victims of tuberculosis and its tendencies to obtain and have modern sanitorial management, training and treatment within the confines of their respective homes." Dr. Daniel Mayer is secretary, Dr. Hugh A. Barbee, treasurer, and Dr. Wallace Longstreth general field agent of the league.

GENERAL.

Yellow Fever.—Ten cases of yellow fever were reported August 10 from the military post of Cienfuegos, Cuba. The source of the infection has not yet been determined. Dr. Agramonte, the yellow fever expert, and Major Henry P. Birmingham of the Army Medical Department have gone to Cienfuegos to take charge of the situation and report. Sergeant Metcalf, hospital corps, U. S. Army, died at Cienfuegos from yellow fever, August 12. The other cases are light and no new ones are expected. The detachment of the Army at Cienfuegos has been using a portion of the Civil Hospital building for hospital purposes, and it is believed that the infection came from unrecognized cases in the civil end of the hospital. The military forces will accordingly vacate the hospital.——The U. S. P. H. and M.-H. Service states that there have been only five cases of yellow fever in the United States this year, four of which occurred in Galveston in March last, imported from Para, and one case at the Mississippi River quarantine, below New Orleans.

Psychiatrists to Meet.—The International Congress for Psychiatry, Neurology, Psychology and the Care of the Insane will be held in Amsterdam, Sept. 2-7, 1907. Among the delegates from governments and different societies may be mentioned Dr. Henry G. Beyer, medical inspector, United States Navy; Drs. Smith Ely Jelliffe, Carlos F. MacDonald, Joseph Collins and B. Sachs, New York City; Dr. W. W. Keen, Philadelphia; Dr. W. A. White, Washington; Dr. Mary A. Wolfe, Norristown, Pa.; Dr. C. H. Hughes, St. Louis, and Dr. E. E. Southard, Boston. Among the papers announced are a considerable number from the United States. There will be three exhibitions, one of historical documents relative to former epochs in the history of the treatment of the insane, another showing objects relative to the nursing of lunatics and neurotics, a third showing instruments employed in the psychiatric, neurologic and psychologic laboratories. Receptions, excursions and other entertainments have been provided for the members.

CANADA.

Home for Medical Council.—The Ontario Medical Council has purchased a building site on University Avenue at a cost of $18,150.

Smallpox.—Dr. Charles Sheard, health officer of Toronto, reports that there are 27 cases of smallpox in the city and that 63 people are quarantined. Two sources of infection have been traced.

New Quarantine Station.—Dr. Montizambert, superintendent of Dominion quarantines, and Dr. Alfred T. Watt, Victoria, superintendent for British Columbia, have gone to Prince Rupert to establish a quarantine station.

New Medical Building.—The competition for plans for the new medical building for McGill University, Montreal, has resulted in the acceptance of the plans of Messrs. Brown and Vallance, Montreal. The new building will cost not less than half a million dollars.

Honor Registrar Pyne.—At a meeting of the Ontario Medical Council, held in Kingston, a resolution was unanimously adopted bearing testimony to the faithful work, the unremitting energy and vigilance of the retiring registrar, Hon. Dr. Robert Allay Pyne, Toronto, who, after nearly 30 years' service, has been obliged to resign.

Attending British Association.—The following Canadian physicians are attending the meeting of the British Medical Association: President Dr. Richard A. Reeve, Irving H. Cameron, Fred N. G. Starr, Dr. Allan M. Baines, James A. Temple, Herbert A. Bruce, Arthur W. Maybury, Helen MacMurchy, and William Oldright, Toronto; Dr. William Burt, Paris, Ontario; Dr. Alfred B. Atherton, Fredericton, N. B.; and Drs. Herbert S. Birkett and Starkey, Montreal.

Hospital News.—Belleville, Ont., will spend $10,000 on a new isolation hospital.——A new hospital is to be erected at Calgary, Alta., at a cost of $140,000. It is to consist of a main building, maternity hospital, isolation hospital and nurses' home.——A $12,000 hospital is to be built at Souris, Man.——A maternity hospital and nurses' home is to be added to the New Westminster (B. C.) Hospital.

Academy of Medicine Officers.—The following is the complete list of the first officers of the Academy of Medicine, Toronto: President, Dr. James F. W. Ross; vice-president, Dr. Alexander McPhedran; secretary, Dr. Herbert J. Hamilton; treasurer, Dr. David J. G. Wishart; members of Council, Mr. Irving H. Cameron, Dr. John T. Fotheringham, Herbert A. Bruce, Fred N. G. Starr, Edmund E. King, Richard A. Reeve, William P. Caven, Harry B. Anderson, John A. Amyot, Albert A. Macdonald, Robert J. Dwyer and Robert D. Rudolf. Section on Surgery: Chairman, Dr. Newton A. Powell; editor, Dr. Charles B. Shuttleworth, and secretary, Dr. Harry A. Beatty. Section on Medicine: Chairman, Dr. William J. Wilson; editor, Dr. John Ferguson, and secretary, Dr. W. Harley Smith. Section on Pathology: Chairman, Dr. William Goldie; secretary, Dr. E. Stanley Ryerson, and editor, Dr. Henry S. Hutchison.

Personal.—Drs. Oswald M. Jones, Frank W. Hall and Richard H. Carter, Victoria, B. C., are in Europe.——Dr. Donald Armour, formerly of Toronto, has been appointed lecturer on the spinal cord at the College of Physicians and Surgeons of London, England.——A portrait of former Dean Walter B. Geikie of Trinity Medical College, is being painted and will be hung in the Toronto Academy of Medicine.——Drs. Harry James and J. S. Pritchard, Toronto, have been added to the resident staff of the Muskoka Sanatorium.——Dr. F. H. Scott, Toronto, has been appointed teacher of physiology in University College, London, England.——Dr. Correlli C. Field has been made a member of the dispensary and outdoor staff of the Winnipeg General Hospital and Dr. P. H. Galloway has been made orthopedic surgeon of the institution.——Dr. John L. Bray, Chatham, has been made registrar of the College of Physicians and Surgeons of Ontario, vice Dr. Robert A. Pyne, Toronto, resigned.——Dr. Robert M. Simpson, Winnipeg, has gone to Europe.——Dr. William Bayard, Saint John, N. B., who has been in practice in that city for 70 years, has received the degree of doctor of laws from his alma mater, the University of Edinburgh.——Dr. Edward A. Preston, St. John, N. B., is reported to be critically ill from heart disease.

Society Meetings.—The twenty seventh annual meeting of the New Brunswick Medical Society was held in St. John, July 16. The registrar reported 273 names on the provincial register. The following officers were elected: President, Dr. Joseph M. Deacon, Milltown; vice-presidents, Drs. John R. McIntosh, St. John, and A. G. Ferguson, Dalhousie; secretary, Dr. Robert G. Day, St. John; corresponding secretary, Dr. Clinton T. Purdy, Moncton; treasurer, Dr. George G. Melvin, St. John, and trustees, Drs. Alban F. Emery, William Warwick and A. Pierce Crocket, St. John. The next meeting of the society will be held in St. Stephen, July 16, 1908.——At the sixteenth annual meeting of the Maritime Medical Association held in St. John, N. B., July 17 and 18, the president in his annual address made a plea for less crowding in cities and the enactment of a law preventing the marriage of persons physically or mentally unfit. The following officers were elected: President, Dr. Murdock Chisholm, Halifax, N. S.; vice-president for Nova Scotia, Dr. George E. DeWitt, Wolfville; vice-president for New Brunswick, Dr. J. V. Anglin, St. John; vice-president for Prince Edward Island, Dr. John Jardine, Summerside; secretary, Dr. George Melvin, St. John, N. B., and treasurer, Dr. George W. T. Farrish, Yarmouth, N. S.

FOREIGN.

Addition to Cancer Institute.—The Berlin Cancer Institute, which is under the direction of von Leyden will receive a considerable enlargement about October 1. New laboratories for the investigation of cancer will be built in a house in the neighborhood of the Charité.

Reception for Visiting Scientists.—In honor of the foreign scientists who will visit Berlin for the International Congress of Hygiene a reception will be held in the exhibition hall in the zoological garden September 28, under the auspices of the medical profession of Berlin.

Alleged Cholera in St. Petersburg.—A cable report, dated August 8, states that apprehension has been aroused by the suspicious death of a cab driver, supposedly from cholera. The sanitary authorities have quarantined sixteen cab drivers who lived in the house where the man died, and are taking other rigorous preventive measures.

Orthopedic Surgeon Appointed for German Schools.—Dr. J. Taendler has been appointed orthopedic surgeon to the schools in Charlottenburg. The object of this new arrangement is a thorough investigation and control of school children affected with spinal curvature. As an aid in this effort, orthopedic gymnastic courses will be established in the gymnasiums (Turnhallen) of the schools.

Personal.—Sir Thomas McCall Anderson, Glasgow, has been appointed honorary physician in ordinary to King Edward, to succeed the late Sir William Gairdner.——Prof. Alexander McPhail, of St. Mungo's College, Glasgow, has been appointed lecturer on anatomy in the Charing Cross Hospital Medical School of the University of London.——Dr. Graham Steele, Manchester, has been appointed professor of medicine in the University of Manchester.

Cerebrospinal Meningitis in Western Germany.—Some alarm has been created by the demand of some of the Berlin political papers for a thorough official investigation of the spread of cerebrospinal meningitis in western Germany. The *Deutsche medizinische Wochenschrift*, July 25, expresses the opinion that there is no real cause for alarm as, although there is an increase of the number of cases in Westphalia and the Rhine provinces, it is not so marked as to justify the fear of an extensive spread of the disease.

LONDON LETTER.

(From our Regular Correspondent.)

LONDON, Aug. 3, 1907.

Sanatorium for Consumptives.

Reference has previously been made to the results achieved at the sanatorium built in connection with the Brompton Hospital for Consumptives. To Dr. Paterson, the superintendent, belongs the credit for inaugurating the graded system of outdoor employment that has brought about the results. The important point is the systematic adjustment of occupation to the condition and capacity of the individual. Patients in the worst condition remain in bed and are attended as in a hospital. Those fit to leave their beds, but not strong enough for exertion, rest on couches in the open air, under cover, if necessary, and occupy their hands with some light task, such as making wool mats or sewing. The next stage is regulated walking for varying distances at a pace adjusted to the patient's condition. Then from mere walking, patients are promoted to carrying light baskets of stones or mold, which work respresents the first grade in outdoor labor. Gardening follows in an ascending order until the strongest men do heavy work. Thus, while the patients' lungs are healing their frames are built into a robust condition which renders them fit to work when discharged and more resistant to recurrence. All the patients, whatever their previous vocations, can easily learn the simple sort of manual operations involved, but any special skill or aptitude possessed by individual patients is brought into play. When a man is fit to be discharged he is set to work at his own trade, if he has one, for three weeks, so as to get the muscles in order to take up active life again. The course for women is, within proper limits, similar to that for men. The hours for outdoor work are from 10 to 12 and from 3 to 5. In addition patients who are fit to do so, make their own beds, clean out their own rooms, wash their own dishes, etc. The work is a remedy for the listlessness and ennui which are so common in sanatoriums. The patients are interested in what they do and having something to show for their work derive a satisfaction which is absent when mere exercises are adopted. They have transformed extensive grounds and converted a wilderness into a beautiful garden.

VIENNA LETTER.

(From our Regular Correspondent.)

VIENNA, July 27, 1907.

Hospital Statistics.

According to the figures of the bureau of statistics the number of beds available in the public hospitals and other charitable institutions in Austria is 37,610, or one bed for each 700 of the population. These figures do not include institutions such as sanatoria, asylums for the insane nor maternity hospitals. Comparison shows that 30 years ago the available beds numbered only 18,916, or a ratio of one bed for each 850 of the population. As regards cost of maintenance of hospitals, this has increased in the last 30 years by 40 per cent. Each patient now costs the state 36 cents daily.

Poisoning by Caustic Potash Solution.

The frequency of poisoning by means of caustic potash (common lye) was discussed at a meeting of the Vienna Medical Society recently; at the same time measures were considered whose adoption should restrict the large number of these accidents. The chief causes of the accidents were the ease with which the poison could be obtained—for household purposes—and the lack of any pungent or disagreeable odor to warn those who inadvertently swallow the solutio . The concentration of the commercial solution varies from 7 per cent. of the salt to 32 per cent. The accidents usually befall children, who ignorantly taste or drink the liquid. There is no law forbidding the sale of this dangerous preparation to children. In seven years 362 cases of injuries by this caustic alone have been collected from the Vienna hospitals. Of these patients 18.6 per cent. died, 10 per cent. had to be operated on, and of the survivors 93 per cent. of the injuries resulted in permanent stricture of the esophagus, which in some cases proved fatal later. The only way of preventing future accidents, or at least of rendering them less frequent, seems to be by prohibiting its sale except by registered druggists. This would tend to awaken the public to the fact that the preparation is a dangerously toxic one.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Pernicious Malarial Fever.

Pernicious malarial fever rarely begins as such and is evidenced by the so-called "congestive chill." This congestive chill occurs when there is an intense and profound chilling of the surface of the body causing a consequent dangerous congestion of the internal organs. This is followed by an enormous rise of temperature, up to the danger point. All this is due to an enormous number of red corpuscles being ruptured at once by the plasmodia so that such an anemia can occur as to leave less than a million red corpuscles per cubic millimeter. The patient can die in the first congestive chill, often dies in the second, and probably never survives the third. The symptoms during the chill are those of brain pressure as shown by coma, or there may be such congestion of the lungs as to interfere with respiration, or the heart may be so disturbed that death occurs from its failure, or there may be bloody urine from congested kidneys. A pernicious chill can resemble apoplexy, or a diabetic or drug coma. Children with such severe chills often have convulsions. Other cases can resemble sunstroke on account of the hyperpyrexia. Pernicious malarial fever rarely is such until after several attacks of milder chills.

The diagnosis of pernicious malaria having been made, if the type can be ascertained by previous malarial chills having occurred, we know the length of time we have for the specific to act. If the type is not known, no chances should be taken, but quinin should be administered both hypodermatically and by the mouth. If there is sufficient time the quinin may be administered by the mouth in doses of from 20 to 30 grains (1.5 to 2 grams) five or six hours before the expected paroxysm, and smaller doses at other periods during the twenty-four hours.

When quinin is given with a hypodermic syringe it should be injected intramuscularly, and probably but rarely intravenously. When given intramuscularly (the most frequent method when the hypodermic syringe is used) it is a mistake to believe that in ordinary conditions it will be absorbed more rapidly than by the stomach. By the intramuscular method, however, there is no question that there is a reservoir of quinin for constant absorption for a number of hours. During the first twenty-four hours, two or three injections, of from 6 to 8 grains (40 to 50 centigrams) each, should be given. Later, probably, one injection a day is sufficient. With proper cleanliness and a proper solution of the most soluble salts

abscesses will rarely be caused. The best muscles for injection are the deltoid the biceps or the glutei.

The most soluble salts of quinin for hypodermatic use are the quinin and urea hydrochlorid, and the quinin bihydrochlorid (bimuriate); the latter is perhaps the better. One cubic centimeter (15 minims) of water will dissolve 20 centigrams (3 grains) of either of these salts readily, and even 25 centigrams (4 grains), hence a loaded hypodermic syringe, viz., 2 cubic centimeters (30 minims) can allow the administration of 0.5 gram (8 grains) of the bihydrochlorid of quinin.

The part selected for injection should be thoroughly cleansed and rendered aseptic. The syringe should be aseptic, and the water used should be sterile, and abscesses or tetanus will not occur. If swelling and inflammation take place at the site of the injection, a thick wet dressing of one part of alcohol to three parts of water, covered with rubber tissue or oil silk and kept in place by a bandage, will soon reduce it.

Hemoglobinuric Fever.

This severe type of malarial fever is, of course, recognized by blood appearing in the urine; this is always a dangerous symptom and shows that the malaria is of a pernicious type, consequently active treatment is indicated. It has been the subject of considerable discussion as to whether or not quinin can cause hemoglobinuria; in other words, whether these hemoglobinuric attacks are caused by the quinin or by the disease.

Dr. William H. Deaderick, Mariana, Ark. (THE JOURNAL A. M. A., June 1, 1907), states that hemoglobinuria denotes the inability of the liver to take care of the large number of broken-down red corpuscles in a given time. If at any time this destruction of red corpuscles is excessive, as occurs in malarial fever, and especially that variety which occurs in southern climates, the liver is unable to metabolize this enormous amount of hemoglobin and the surplus is passed off by the kidneys, and bloody urine is the result. Some individuals, even when the malarial fever is not severe, readily leak this blood from their kidneys and have hematuria or hemoglobinuria.

Dr. Deaderick says: "Hemoglobinuric fever occurs as a rule in those who have dwelt in the endemic locality at least several months, and usually from two to four years, and in the majority of cases occurs in persons who have suffered from repeated attacks of malarial fever." He states that the form of parasite found in the great majority of cases is the estivo-autumnal. He thinks that quinin will probably never cause, and will often prevent hemoglobinuria, although it is certain that the majority of patients who have had hemoglobinuria have also previously taken quinin. This, however, is simply a case of *post hoc* and not *propter hoc*.

Brem, in THE JOURNAL A. M. A., Dec. 15, 1906, states that quinin should always be given in malarial hemoglobinuria, and that under its use the passage of blood by the kidneys will cease. He gives quinin intramuscularly, and believes that the best results will be obtained by giving 10 grains intramuscularly every four hours, during the first forty-eight hours, or 15 grains may be given for the first three or four injections. Two different preparations of quinin have been used for intramuscular injections, the bihydrochlorid and the hydrochlorid with urea, the bihydrochlorid proving the less irritating and the less likely to cause abscess.

On the other hand, Ketchen, in the *British Med. Jour.*, Nov. 10, 1906, states that he has seen quinin cause hemoglobinuria. He thinks that malarial germs should be found in the blood before quinin is given, as there may be a separate parasite causing hemoglobinuric fever.

The consensus of opinion, however, seems to be that quinin should certainly be given in hemoglobinuric fever, and hypodermatically. It may also be stated that malarial germs may cause hemoglobinuric fever and still not be found in peripheral blood.

Schropshire, writing in THE JOURNAL A. M. A., Sept. 5, 1903, says that in hemoglobinuric fever 40 grains of quinin *per diem* should be given hypodermatically or intravenously until the period of expected exacerbation is passed, half that dose until the time of several exacerbations have passed, then the drug discontinued for three or four days; but he would give 20 or 30 grains of quinin every four or five days for six weeks. He would also combine the methylene blue treatment with the quinin, giving from 3 to 6 grains two or three times a day.

The method of injecting quinin intramuscularly is above described under the heading of "Pernicious Malarial Fever." If it is deemed best to give quinin intravenously, as suggested by Schropshire, either the quinin and urea hydrochlorid or the quinin bihydrochlorid would best be dissolved in physiologic saline solution, viz., 0.9 of 1 per cent. of sodium chlorid in distilled water.

Remittent Malarial Fever.

This is the estivoautumnal variety of malarial fever, and has often been called bilious remittent fever. Several sets of the plasmodia of this special form of malaria are in the blood, and the sets of germs maturing at different times cause a more or less continuous fever. A frequent use of the thermometer, however, will often show short periods without fever, and we may thus obtain an indication of the best time to administer the quinin, it being advantageous to give a large dose several hours before a periodical rise of temperature. If no rhythm can be discovered with the thermometer, the quinin should be given regularly, with every other day a small dose of calomel.

The quinin is best administered in elastic capsules, perhaps from 12 to 20 grains being given every twenty-four hours, depending on the susceptibility of the patient to the drug, marked cinchonism being avoided. The quinin should not be given on an empty stomach, milk being a very good menstruum for it. [For methods of administering quinin, see THE JOURNAL A. M. A., Aug. 3, 1907, page 428.] The amount of quinin and the length of time it should be given in this disease depends largely on the locality in which the disease occurs, much larger doses being required to effect a cure in some regions than in others. Salol or salicylic acid, used in small doses as a partial antiseptic to the upper part of the bowels, is of advantage, as owing to the congestion of the liver in this disease bile is imperfectly produced, and considerable bowel infection occurs. If the every-other-day small dose of calomel does not work satisfactorily, a small dose of a saline laxative should be given. Severe purging should not be caused, however, and the amount and frequency will depend on the condition of the patient.

The temperature, the pulse, the mouth, the nutrition and the general hygiene are all to be watched and treated with the same care as in typhoid fever. Remittent malarial fever is persistent and troublesome to treat, and under most favorable conditions, generally lasts from two to three weeks or longer. It is a serious sickness, and should always be treated as such. The convalescence is often protracted and requires tonics and the prolonged use of quinin, perhaps combined with small doses of arsenic, and often a change of air before health is completely restored.

The salol is best given in capsules, put up dry, as:

℞.	gm.		
Phenylis salicylatis	6	or	3iss

Fac capsulas 20. Sig.: A capsule every six hours.

Salol should not be given if there is any kidney congestion.

A good tonic during convalescence is as follows:

℞.	gm.		
Arseni trioxidi	.04	or	gr. 2/3
Strychninæ sulphatis	.04		gr. 2/3
Ferri reducti	1		gr. xv
Quininæ sulphatis	4		3i

M. et fac capsulas 20. Sig.: A capsule three times a day, after meals.

Correspondence

Pseudo-Original Articles—The Case of Dr. Arthur E. Gue.*

LIBRARY OF THE SURGEON GENERAL'S OFFICE.
WASHINGTON, D. C., July 30, 1907.

To the Editor:—The library of the Surgeon's General's office of the War Department endeavors to index all original matter in medical periodicals, unless of an absolutely trifling nature. As a matter of course, memory can not be relied on to determine whether an article has already been marked, and its inclusion by the editor of a periodical among "original articles" is, therefore, accepted. Occasionally a paper appears in several journals marked as "original" in each, with no note to show that it has appeared or is to appear in any other. As this practice causes useless work in carding until it is detected, and also smacks somewhat of disingenuousness, it is thought that a particularly glaring example will be of interest to your readers and to the editors of many medical journals. The article in question is entitled "The Mechanical and Chemical Effect of Milk on the Human," by Arthur E. Gue, of Detroit.

Before the title became familiar to the eye and so instantly distinguished among the hundreds of articles marked daily for carding, the above named production was noted here during the last few months in the following publications, always included among "original articles":

1. *Chicago Medical Times*, 1907, xl, 204-207.
2. *Colorado Medical Journal*, Denver, 1907, xiii, 45-48.
3. *Louisville Monthly Journal of Medicine and Surgery*, 1906-7, xiii, 367-369.
4. *Medical Bulletin*, Philadelphia, 1907, xxix, 168-171.
5. *Medical Council*, Philadelphia, 1907, xii, 138-140.
6. *Milwaukee Medical Journal*, 1907, xv, 76-79.
7. *Physician and Surgeon*, Detroit and Ann Arbor, 1907, xxix, 120-123.
8. *Toledo Medical and Surgical Reporter*, 1907, xxxiii, 161-163.
9. *Virginia Medical Semi-Monthly*, Richmond, 1907, xii, 33-35.

As soon as the opening words "Milk is the normal secretion of the mammary glands of mammals," etc., became as familiar as the first words of Genesis or of the Declaration of Independence, the weary examiners ceased to affix the mystic sign calling for carding, and so it is believed the article has escaped record in at least as many more journals as I have already named.

WALTER D. MCCAW,
Major, Surgeon, U. S. Army, Librarian, S. G. O.

[COMMENT: Some time ago THE JOURNAL, under the heading "Cumbering the Record," editorially called attention to this same evil which was then rather prominent in medical literature, both here and abroad, viz., the reprinting of the same article in different medical publications, some in identical form, sometimes disguised in title.

The instance of multiple publication referred to above by Major McCaw is not comparable in the number of journals utilized by many authors. Some five years ago we called attention to an article written by a Dr. H. Plympton of Brooklyn, which appeared as original in some twenty-eight different journals, including four weeklies. However, the above paper was offered to THE JOURNAL and was refused, and probably Dr. Gue sent his remarkable contribution to many journals that did not accept his offer and publish it.

Undoubtedly this practice insures a wider circle of readers, but each needless repetition—and almost all such repetitions are needless enough—diminishes the value of the aggregate of the medical literature of the day, and it makes matters uncomfortable for the bibliographer. If the titles are slightly changed, as is sometimes the case, a fraud is practically consummated on the medical reading public. Most of the transgressors are not among the eminent of the profession, but there are some honored names that are not specially honored by their multiple appearances in this way. If an article is really valuable it will command attention and secure a wide circulation by reproduction in honest reprints and excerpts much better than by this multiplication of spurious first appearances. It is also an imposition on medical editors and publishers, who are not desirous of publishing as original matter what has already appeared elsewhere. The amount of set up matter that has to be "killed" on this account is not insignificant. In fact, the practice is morally inexcusable. As matters are and as our correspondent shows, it is still one of the standing evils in medical periodical literature.—EDITOR.]

*According to the American Medical Directory Dr. Gue is a graduate of the Chicago Homeopathic Medical College, 1891.

Personal Surgical Errors.

NEW YORK CITY, Aug. 8, 1907.

To the Editor:—It is doubly gratifying to read such an article as that with the above title in THE JOURNAL, July 20. The world is full of honest men, but not so full of brave men, for it takes such a man to own and proclaim his mistakes publicly. Among these errors is one to which I desire to call particular attention; namely, the employment of the catgut purse-string suture in dealing with the stump of the amputated appendix. The patient died suddenly on the third day. The postmortem showed that the suture had given away, and that the bowel contents had escaped into the peritoneal cavity, causing the patient's death. The author continues: "I then commenced to use linen thread; many of these patients, however, complained so bitterly of pain in the region of the stump for several months that I later made use of two separate catgut sutures, the outer strand hardened either with formalin or chromic acid." In my opinion the operator has gone from one danger to another. There is already a long list of accidents, a number of them fatal, from the use of this purse-string suture method. Since I read my paper before the Association in June, other cases have come to my knowledge. If every operator were as courageous as Dr. MacLaren, I doubt not that I could swell the list of accidents to a considerable extent.

I earnestly call the attention of surgeons to what I believe to be a grave error in technic. The simple silk or linen ligature applied to the stump, one-quarter of an inch from the cecum, with disinfection, by carbolic acid, of the small bit of mucosa beyond the ligature, does away with the danger of hemorrhage, and, so far as I can inform myself, the danger of leakage. I have failed to find a list of accidents from its employment. As yet I have not a single one, and I have made wide inquiry, and I would be greatly obliged for any reports of such cases. I am of the opinion that any method which requires the traumatism of a suture in the cecum, or in the stump of the appendix, is faulty in that it is entirely unnecessary, as well as unsafe, when compared to the ligature.

JOHN A. WYETH.

Dr. Knopf and Morphin in Tuberculosis.

NEW YORK, July 30, 1907.

To the Editor:—On the day following the meeting of the National Association for the Study and Prevention of Tuberculosis there appeared in the *Philadelphia North American* a sensational article, reporting that I advised the killing of dying consumptives quickly and painlessly by heavy doses of morphin, and that I admitted that it was my daily practice to do so. It was furthermore said that there had been a bitter debate and that the session adjourned in confusion. These false statements were copied by nearly all the newspapers in the United States, were cabled to Europe and made the rounds in the papers and magazines of England and the whole European continent. In spite of explanations and denials I sent to the Associated Press, in spite of a strong letter written by Dr. George Dock, the presiding officer of the meeting, and sent to the leading medical journals of America, giving the true version of my remarks, the false statement has continued to be published and republished and commented on to the great detriment of the anti-tuberculosis crusade all over the world. For example, ignorant consumptives in St. Louis, who had read the sensational lie, refused the visit of the nurses sent to them by the Society for the Relief and Prevention of Tuberculosis. The *St. Louis Republic*, which published this item, said: "Consumptives, since they read that report, apparently have a dread that the visit of the nurse may mean morphin to end their suffering." It thus became necessary to issue the following statement, by order of Prof. Frank Billings,

president of the National Association for the Study and Prevention of Tuberculosis:

Various daily newspapers published on May 8, what purported to be a report of the remarks of Dr. S. A. Knopf of New York, before the National Association for the Study and Prevention of Tuberculosis, in which he was made to say: "It is my practice and your sacred duty when you see a dying consumptive before you to give the sufferer morphin in plenty that the end may come quickly and painlessly."

No such statement was made by Dr. Knopf, but since, in spite of an immediate explicit denial by the doctor, a great many newspapers in this country and Europe continue to publish the false report as authentic news, Dr. Frank Billings of Chicago, president of the National Association for the Study and Prevention of Tuberculosis, authorizes the following statement:

> Quite apart from the false position in which the speaker was placed and the injury done him, the publication of such a piece of sensationalism can not fail to have a very deleterious effect on impressionable tuberculosis patients throughout the country, and may keep others from seeking needed medical aid.

The following statement, made by Prof. George Dock of the University of Michigan, who presided at the meeting at which Dr. Knopf spoke, should preclude all further misunderstanding:

> I heard clearly what Dr. Knopf said. I am sure that I know what he meant, and am sure that everybody in the room must have understood what he said. His words could not possibly be converted into the meaning given in the public press. It was perfectly clear that he meant to relieve patients in the last stages. Everybody knows that this prolongs life, while making it very much easier for the patient.
>
> LIVINGSTON FARRAND, Executive Secretary.

I had hoped that this statement would stop all further comments on and circulation of the sensational falsehood. I confess that I have longed for the lie to die out, or, in spite of the loyalty manifested by my professional friends during these hours of trial, for which I beg them to accept my most heartfelt thanks, the ordeal had become almost unbearable.

Equally untrue was the report of the alleged "adjournment in confusion" and the "lively and bitter debate" which followed Dr. Flick's report, condemning the use of morphin and its compound. In refutation of this reflection made by Mr. Beamish on a body of scientific men, composed of many of the leading American physicians, who have devoted their lives to the study and prevention of tuberculosis, permit me to submit an extract from a letter which was received recently by Dr. Joseph Walsh, the secretary of the section:

> I was present as secretary of the section at which you spoke, and instead of the section breaking up in confusion, as was stated in the newspapers, the section closed in the perfectly regular way, and your statement as generally understood by the medical men seemed to be generally agreed with.

I beg THE JOURNAL of the American Medical Association to publish and the medical press of the United States in general to copy this communication in the hope that it will help individual members of the profession to refute once for all the inconceivable proposition that any physician true to his calling could possibly propound such a doctrine as shortening the life of any patient entrusted to his care. To the individual members of the profession in this country and abroad I address a personal appeal to embrace every opportunity to disabuse any individual who may labor under the misapprehension that I or any other member of the American medical profession recommended shortening the lives of consumptives or any others by the administration of morphin, chloroform or any other drug. I make this appeal not merely for my own sake, but, above all, for the sake of truth and for the sake of consumptive sufferers in this and in other countries. S. A. KNOPF.

Queries and Minor Notes

STATUS OF HYOSCIN-MORPHIN ANESTHESIA.

BROOKLYN, N. Y., Aug. 8, 1907.

To the Editor:—In the July number of the *Therapeutic Gazette* I find an article taken from the *Medical Record* advocating the use of hyoscin-morphin hypodermatically to relieve labor pains.

1. Will you tell me if it is considered safer than the scopolamin-morphin preparation?

2. If you consider it safe, what dosage would you advise, and how often repeated?

3. Do you consider the addition of cactin, as in the Abbott Alkaloidal Co.'s tablet, of any decided benefit? J. A. N.

ANSWER.—The article referred to in the *Therapeutic Gazette* is an editorial abstract of an article which appeared in the *Medical Record* Jan. 12, 1907, in which hyoscin-morphin-cactin was advocated to relieve pain. The *Therapeutic Gazette*, however, wisely omitted mention of the cactin in its abstract. The article in question, by Dr. W. H. Birchmore, bears all the earmarks of the class of articles known as "writeups." We make this statement on the character of the article itself and partly because this author, whose name we are unable to find in any directory, seems to have the habit of writing articles favoring proprietary remedies. We have a record of several, in some of which he praises other of Abbott's preparations.

1. Since hyoscin and scopolamin are recognized as being practically identical, both from a chemical and from a pharmacologic point of view, the combination on the market as hyoscin-morphin is presumably just as safe as, and no safer, and just as valuable as, and no more so, than the scopolamin-morphin combination which has been so much used in Germany, and to a less extent in this country, during the last six years, and concerning which a number of articles have appeared in THE JOURNAL.

2. Gauss (*Centbl. of Gyn.*, Jan. 12, 1907), who has elaborated the technic of this use of scopolamin, gives as the initial dose 0.01 gm. (1/6 grain) of morphin and 0.003 gm. (1/200 grain) of scopolamin and gives an additional dose of 0.00015 gm. (1/400 grain) of scopolamin at the end of from 30 to 45 minutes if the patient shows signs of returning memory as tested by her recognition of some object or experience, and repeats this dose of scopolamin as often as is necessary to prevent the return of memory, but almost always without an additional dose of morphin. Bass (*Münch. med. Wochschr.*, March 12, 1907), states that 0.01 gm. (1/6 grain) of morphin and 0.0003 gm. (1/200 grain) of scopolamin are sufficient, and the results are not materially improved by increase of dose. He reports the death of one child which he attributes to scopolamin (hyoscin) of which 0.00075 gm. (1/90 grain) were injected into the mother.

3. No. Cactin is a proprietary article put out by the Abbott Alkaloidal Co., and claimed by them to be a concentration—whatever that may mean—of *Cactus grandiflora*, which is usually designated by pharmacologists as inert.

ROCHE'S EMBROCATION.

EASTON, PA., Aug. 1, 1907.

To the Editor:—Can you give me the approximate composition of a preparation called "Roche's Herbal Embrocation," widely exploited for whooping-cough and many other conditions, and put on the market by E. Fougera & Co. of New York?

DAVID H. LUDLOW.

ANSWER.—Roche's Embrocation is a nostrum and its exact composition is not known. From published formulas it appears that it is prepared by digesting a fatty oil with asafetida. The following formula for a similar preparation has been published: Coarsely powdered asafetida and alkanet, each 5.0 gm. (75 grains), are digested, with olive oil, 180 gms. (6 fluidounces), during eight days and then filtered. To the clear filtrate are added oil of caraway, oil of turpentine, each 9.0 gm. (2.25 fluidrams), oil of pine needles, 1.2 gm. (18 minims), and oil of bergamot, 0.8 gm. (12 minims). Another published formula directs that 2.5 gm. (38 grains) asafetida be digested for a few hours with 60 gm. (2 ounces) olive oil; the clear oil is decanted and mixed with 2 gm. (30 minims) each of oil of caraway and oil of turpentine, and a few drops of oil of bergamot.

CYSTOGEN.

CLARKSON, KY., Aug. 6, 1907.

To the Editor:—Will you kindly state whether or not the Council on Pharmacy and Chemistry has passed on the merits or demerits of the remedy called Cystogen, made by the Cystogen Chemical Co., St. Louis. It is claimed by the manufacturers that it is a remedy, *per se*, for cystitis. They claim this remedy to be: "A definite chemical compound with the formula of $C_6H_{12}N_4$, and when eliminated by the kidneys it decomposes to some extent, forming formaldehyd." Will you kindly give your opinion as to the correctness of these claims? B. C. WILSON.

ANSWER.—Cystogen is a trade name applied to hexamethylenamin (hexamethylenamina U. S. P.) This article is included with the list of "New and Non-Official Remedies" under the trade names, formin, methaform, uriform and urotropin. It has also been called hexamin, hexacystin, aminoform, cystamin, metramin, vesalvin, urisol, and gonocystin. These products are chemically identical but vary widely in selling price. Thus, the official hexamethylenamin is sold at about 20 cents an ounce, while Cystogen is sold at $1.00 an ounce.

LYSOL.

LEAD, S. D., Aug. 7, 1907.

To the Editor:—Has there been published an analysis of Lysol? If so, can you tell me the constituents? F. E. CLOUGH.

ANSWER.—Lysol is a solution of cresol in soft (green) soap, the solution containing 50 per cent. of cresol, and is practically identical with Liquor Cresolis Compositus, U. S. P.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 10, 1907:

Collins, C. C., and Whitmore, E. R., asst.-surgeons, appointed members of a board of officers to meet at Fort Riley, Kan., for the examination of such officers as may be ordered before it to determine their fitness for promotion.

Appel, A. H., deputy surgeon general, and Scott, G. H., asst.-surgeon, appointed members of an army retiring board to meet at Denver.

Buck, C. D., asst.-surgeon, assigned to duty as surgeon, U. S. Army transport *Crook*, sailing Aug. 10, 1907, from San Francisco to Manila, P. I. On arrival at Manila will report to the commanding general, Philippines Division, for assignment to duty.

Winter, F. A., surgeon, granted twenty days' leave of absence.

Wadhams, F. H., asst.-surgeon, Fort Slocum, N. Y.; Ruffner, E. L., asst.-surgeon Columbus Barracks, O.; Whitmore, E. R., asst.-surgeon, Fort Riley, Kan.; Halloran, P. S., asst.-surgeon, Fort Leavenworth, Kan.; Krebs, L. Le R., asst.-surgeon, Fort Hancock, N. J.; Phalen, J. M., asst.-surgeon, Fort Logan H. Roots, Ark., and Billingslea, C. C., asst.-surgeon, Fort Myer, Va., are relieved from duty at the posts designated after their names, and will proceed to San Francisco and take transport to sail from that place about Oct. 5, 1907, for the Philippine Islands. On arrival at Manila they will report in person to the commanding general, Philippines Division, for assignment to duty.

Porter, R. S., and Duncan, W. A., asst.-surgeons, relieved from duty in the Philippines Division, to take effect at such time as will enable them to sail from Manila about Oct. 15, 1907, for San Francisco, reporting on arrival by telegraph to the Adjutant General of the Army for further orders.

Farr, C. W., asst.-surgeon, leave of absence extended two months.

Rich, E. W., asst.-surgeon, reports for duty at target range, Williamsburg, Va. Left Camp Capt. John Smith, Jamestown Exposition, Va., same date.

Leeper, J. F., contract surgeon, left Army General Hospital, Fort Bayard, N. M., on sick leave of absence for three months.

Dickenson, C. F., contract surgeon, arrived July 28, at San Francisco, on the transport *Buford*, for leave of absence for one month.

Treuholtz, C. A., contract surgeon, left Army General Hospital, Fort Bayard, N. M., on leave of absence for two months.

Ashburn, J. K., contract surgeon, granted leave of absence for ten day.

de Quevedo, L. G., contract surgeon, granted leave of absence for two months.

Hutson, T. O., contract surgeon, granted leave of absence for ten days.

Kress, C. C., contract surgeon, granted an extension of ten days to his leave of absence.

Patterson, E. W., contract surgeon, and Mason, G. L., dental surgeon, sailed on the *Logan* August 5, from San Francisco, for Philippine service.

Hollingsworth, R. M., dental surgeon, sailed on the *Warren*, August 5, from San Francisco, for Philippine service.

Redewill, F. H., contract surgeon, granted leave of absence for ten days.

Huber, E. G., contract surgeon, ordered from Fort Snelling, Minn., to Fort Assinniboine, Mont., for temporary duty.

Long, C. J., dental surgeon, granted leave of absence from August 12 to September 5, inclusive; ordered to sail from San Francisco for Philippine service, September 5.

Navy Changes.

List of changes in the Medical Corps, U. S. Navy, for the week ending Aug. 10, 1907:

(Order issued by commanding general, Army of Cuban Pacification.) Mears, J. B., asst.-surgeon, granted leave for one month, under exceptional circumstances, with permission to visit the United States, to take effect about July 30, 1907.

Melhorn, K. C., and Biello, J. A., acting asst.-surgeons, appointed acting asst.-surgeons, from Aug. 2, 1907.

Clifford, A. B., asst.-surgeon, ordered to the *Maryland*.

Public Health and Marine-Hospital Service.

List of changes of stations and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Aug. 7, 1907:

Pettus, W. J., asst. surgeon general, granted leave of absence for twenty-six days, from Aug. 12, 1907.

Wickes, H. W., P. A. surgeon, granted leave of absence for one month, from Aug. 7, 1907.

Wilson, R. L., P. A. surgeon, directed to proceed to Fountainbleau, Miss., for special temporary duty, completion of which to rejoin his station at New Orleans.

Bahrenburg, L. P. H., P. A. surgeon, granted leave of absence for seven days, from July 15, 1907, under Paragrapn 191, Service Regulations.

Robertson, H. McG., asst.-surgeon, granted leave of absence for five days, from July 25, 1907, under Paragraph 191, Service Regulations.

Mullan, E. H., asst.-surgeon, relieved from duty at Perth Amboy quarantine station and directed to proceed to Ellis Island for duty.

Wollenburg, R. A. C., asst.-surgeon, relieved from duty at Detroit, Mich., and directed to proceed to Ellis Island for duty.

Herring, R. A., asst.-surgeon, granted leave of absence for one day in July, 1907, under Paragraph 191, Service Regulations.

Porter, J. Y., sanitary inspector, directed to proceed to Fernandina, Mayport, Carrabelle, and Santa Rosa, for special temporary duty, on completion of which to rejoint his station at Key West, Fla.

Delgado, J. M., acting asst.-surgeon, granted leave of absence for one day in July, 1907, under Paragraph 210, Service Regulations.

Duffy, Francis, acting asst.-surgeon, granted leave of absence for six days, from Aug. 5, 1907.

Elfers, J. C., acting asst.-surgeon, granted leave of absence for twenty days, from Aug. 3, 1907.

Hicks, B. L., acting asst.-surgeon, granted leave of absence for twelve days, from Aug. 4, 1907.

O'Reilly, W. J., acting asst.-surgeon, granted leave of absence for eight days, from Aug. 8, 1907.

Savage, W. L., acting asst.-surgeon, granted leave of absence for thirty days, from Aug. 4, 1907.

Schwartz, Louis, acting asst.-surgeon, granted leave of absence for one day in July, 1907, under Paragraph 210, Service Regulations.

Simonson, G. T., acting asst.-surgeon, granted leave of absence for ten days, from Aug. 5, 1907.

Wetmore, W. O., acting asst.-surgeon, granted leave of absence for seven days, from July 7, 1907, under Paragraph 210, Service Regulations.

APPOINTMENT.

Dr. Rhoderick W. Browne appointed an acting asst.-surgeon for duty at Norfolk, Va., Aug. 7, 1907.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Aug. 9, 1907:

SMALLPOX—UNITED STATES.

Alaska: St. Michael, May 26, 1 case (from vessel).
Illinois: Aurora, June 1-July 27, 55 cases; Mechanicsburg, January 16-August 1, 19 cases.
Iowa: Davenport, July 1-31, 7 cases.
Kentucky: Lexington, July 20-27, 1 case; Louisville, July 25-August 1, 1 case.
Louisiana: New Orleans, July 20-27, 1 case (imported).
Missouri: St. Joseph, July 20-27, 2 cases.
New York: Buffalo, July 29, 2 cases.
Ohio: Hamilton, March 29-June 15, 21 cases.
Pennsylvania: Philadelphia, July 6-13, 1 case.
Washington: Spokane, July 6-27, 11 cases (1 imported); Tacoma, July 13-20, 2 cases.
Wisconsin: Milwaukee, July 20-27, 5 cases.

SMALLPOX—FOREIGN.

Brazil: Rio de Janeiro, June 16-July 7, 7 cases 2 deaths.
Canada: Winnipeg, July 20-27, 1 case.
China: Shanghai, June 15-22, 4 cases (foreign), 47 deaths (native).
Egypt: Cairo, June 3-July 8, 4 cases, 2 deaths.
Columbia: Barranquilla, July 24, present.
India: Calcutta, June 15-22, 12 deaths; Madras, June 15-July 5, 3 deaths.
Luxemburg: June 22-July 6, 1 case.
Madeira: Funchal, July 14-21, 40 cases, 3 deaths.
Mexico: Aguas Calientes, July 20-27, 5 deaths.
Russia: Libau, June 22-July 13, 3 cases; Riga, April 1-30, 12 deaths; July 6-13, 6 cases.
Spain: Barcelona, July 10-20, 2 deaths; Valencia, July 1-31, 12 cases, 3 deaths.
Turkey: Bassorah, June 22-29, present; Damascus, June 29-July 6, present.

YELLOW FEVER.

Brazil: Rio de Janeiro, June 16-June 30, 4 cases, 2 deaths.
Columbia: Barranquilla, May 27, 1 case, 1 death.
Cuba: Matanzas, August 4-6, 1 case, 1 death.
West Indies: Trinidad, Port of Spain, June 29-July 13, 3 cases, 1 death.

CHOLERA.

India: Bombay, June 25-July 2, 1 death; Calcutta, June 15-July 22, 44 deaths; Rangoon, June 22-29, 4 deaths; Kashmir, June 18-24, 1,149 cases, 879 deaths.

PLAGUE.

Africa: King William's Town, June 15-22, 1 case.
Brazil: Rio de Janeiro, June 16-July 7, 7 cases, 1 death.
China: Amoy, July 27, present.
Egypt: Alexandria, July 11-18, 13 cases, 8 deaths; Port Said, July 11-18, 1 case, 1 death; Behera Province, July 1-18, 1 case, 1 death; Beni Souef, July 11-18, 2 cases.
Formosa: June 22-29, 86 cases, 77 deaths.
India: General, June 8-15, 21,647 cases, 19,934 deaths; Bombay, June 25-July 2, 27 deaths; Calcutta, June 15-22, 25 deaths; Rangoon, June 22-29, 51 deaths.
Persia: Island of Bahrein, June 19, epidemic; Mohammerah, June 19, present.

Marriages

SAMUEL J. TERRILL, M.D., to Miss Mertie Orr, both of Meta, Mo., at Clayton, Mo., July 29.

D. EARL MUSGRAVE, M.D., to Miss Eliza Flournoy Wood, both of Standard, W. Va., August 7.

JANE ELIZABETH HOYT, M.D., Concord, N. H., to George W. Stevens of Claremont, N. H., June 26.

OSCAR EDWIN FOX, M.D., Reading, Pa., to Miss Alice Sylvia Hunt of Asbury Park, N. J., August 1.

WALTER H. ALLYN, M.D., Waverly, Ill., to Miss Helen MacMillan Hawley of Chicago, Ill., August 1.

ROBERT MORRISON, M.D., Sheraden, Pa., to Miss Rosetta Ryan of Cambridge Springs, Pa., August 7.

FRANCIS SWIFT BOURNS, M.D., Seattle, Wash., to Miss Mary Catherine Doyle of Goderich, Ont., July 10.

JAMES B. SHIVELY, M.D., Shippensburg, Pa., to Miss Nellie G. Caldwell of Pittsburg, at Carlisle, Pa., July 31.

LIEUT. WILLIAM HADLEY RICHARDSON, assistant surgeon, U. S. Army, to Miss Alice Huey Goodin, at Fern Bank, Ohio, July 18.

LA BARRE JAYNE LEAMY, M.D., Philadelphia, to Miss Beatrice P. McGill Polphine of Media, Pa., at Wilmington, Del., June 30.

Deaths

Benjamin Grinell Strong, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1883; for many years a practitioner of Long Island City, N. Y., and coroner's physician of the Borough of Queens; for several terms coroner of Queens County, and a member of the staff of St. John's Hospital, Long Island City, died at his old home in Reading, Mich., from tuberculosis, July 26, after an illness of two years, aged 46. At a meeting of the Medical Society of Long Island City, held July 29, resolutions of sorrow and sympathy were adopted.

Edward W. Lee, M.D., L.R.C.P. Ireland, Dublin, 1862; a member of the Illinois State and Cook County and Chicago medical societies; for many years a well-known surgeon of Chicago, and for 20 years chief surgeon of the Pennsylvania Lines west of Pittsburg, and attending surgeon to the Cook County Hospital and other institutions, died at his home in Chicago, August 11, aged 67.

Silas Scarboro, M.D. University of Maryland School of Medicine, Baltimore, 1857; from 1863 to 1864 assistant surgeon of the Second Maryland Infantry, U. S. V., and invalided in 1864; a member of the Maryland House of Delegates from 1878 to 1882, and at one time a member of the Harford County school board, died at his home in Towson, Md., August 7, aged 80.

Hamilton Osgood (Years of Practice, Mass.); a member of the Massachusetts State and Suffolk County medical societies; for many years a practitioner of Boston, and at one time a member of the staff of the *Boston Medical and Surgical Journal;* an early student of hypnotism and suggestive therapeutics, died in Oxford, Eng., July 10, aged 68.

James Marcellus Hopkins Bateman, M.D. University of Maryland School of Medicine, Baltimore, 1867; formerly president of the State Board of Health of Maryland; a member of the State Board of Medical Examiners, and local surgeon of the Pennsylvania System, died at his home in Easton, Md., from nephritis, August 2, aged 62.

Thomas H. Sabin, M.D. Medical Department of the University of Wooster, Cleveland, Ohio, 1882; a veteran of the Civil War and an organizer of a cavalry company in the Spanish-American War; at one time physician to the Indian School at Sacaton, Ariz., died at his home in Casa Grande, Ariz., July 29, from heart disease, aged 63.

Andrew Dunbar Forsythe, M.D. Hospital College of Medicine, Louisville, Ky., 1897; a member of the Medical Association of the District of Columbia; for ten years a practitioner of Washington, D. C., died in the Georgetown University Hospital, in that city, July 30, from peritonitis, after an illness of five days, aged 33.

Thomas Boyers Brown, M.D. Medical Department of the University of Nashville, Tenn., 1898; a member of the Tennessee State Medical Association and Sumner County Medical Society, died at his home near Gallatin, July 30, from peritonitis, following typhoid fever, after an illness of two weeks, aged 32.

Leo W. Sapp, M.D. Cleveland University of Medicine and Surgery, 1856; one of the founders of the Huron Road Hospital, Cleveland, and for many years a member of the faculty of Western Reserve University Medical College, died at his home in Cleveland, August 4, after an illness of two months, aged 74.

George H. Stanley, M.D. Medical School of Harvard University, Boston, 1870; health officer of Pawtucket, R. I., for several years; a member of the Rhode Island and Providence County medical societies, died at his home in Pawtucket, R. I., July 30, from ptomain poisoning, after an illness of one week, aged 61.

John G. Geers, M.D. Miami Medical College, Cincinnati, 1876; for 30 years a practitioner of West Point, Iowa; mayor of the city in 1902 and 1903; a member of the school board for many years, and a member of the Iowa State and Lee County medical societies, died in a hospital in St. Louis, July 30, aged 53.

James F. Canavan, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1899; a member of the Michigan State and Grand Traverse County medical societies; first assistant physician at the Northern Michigan Asylum, Traverse City, died from appendicitis, July 26, aged 31.

Clarke C. Campbell, M.D. Jefferson Medical College, Philadelphia, 1846; surgeon of the Fifth Texas Volunteers, C. S. A., during the Civil War; afterward in charge of the City Hospital, Galveston; city physician of that city for three terms, died at his home in Fort Worth, July 27, aged 82.

Edward G. Ferguson, M.D. Faculty of Medicine of Queen's University, Kingston, Ont., 1863; at one time a professor in the Macon (Ga.) Medical College, and a prominent practitioner of that city for many years, died at Indian Springs, Ga., July 25, after an illness of two years, aged 65.

Christian E. Burkeholder, M.D. Rush Medical College, Chicago, 1899; of Jacksonville, Ill.; a member of the Illinois State and Morgan County medical societies; died at Our Saviour's Hospital, Jacksonville, July 28, two days after an operation for strangulated umbilical hernia, aged 31.

Wilson J. Flinn, M.D. Northwestern University Medical School, Chicago, 1891; a practitioner of Blaine, Kan., and for two terms coroner of Pottawatomie County, died at the home of his mother in Holton, Kan., August 1, from gallstone disease, after a prolonged illness, aged 45.

Winfield Scott Stone, M.D. Louisville, (Ky.) Medical College, 1874; a veteran of the Civil War; some-time township treasurer, and for nine years a member of the school board of Caledonia, Ohio, died at his home in that village, August 1, from neuritis, aged 61.

A. Dow Coburn, M.D. McGill University Medical Faculty, Montreal, 1892; a practitioner of Canterbury, N. B., died at the home of his mother in Frederickton, N. B., July 25, from tuberculosis, after an illness of more than a year, aged 36.

Charles A. Zimmerman, M.D. Curtis Physio-Medical Institute, Marion, Ind., 1896; some-time professor of electrotherapeutics in his alma mater, died suddenly at his home in Fort Wayne, Ind., from angina pectoris, July 29, aged 62.

Leonard S. Taylor, M.D. Bennett College of Eclectic Medicine and Surgery, Chicago, 1891; died at his home in Elgin, August 5, from septicemia, due to an operation wound, after an illness of several months, aged 39.

Edwin B. Crisswell, M.D. Cleveland Homeopathic Medical College, 1883; of Edwardsburg, Ind., who was injured in a fall from a street car in Elkhart, August 2, died in that city, August 6, aged 49.

Adolph Goldsmith, M.D. Missouri Medical College, St. Louis, 1885; a practitioner of St. Louis until he became an invalid, in 1895, died at the Missouri Baptist Sanitarium, St. Louis, July 30, aged 48.

Charles Neill, M.D. Toronto University, 1893; a native of Barry, Ont., died recently in Chicago, while on his way for his health to Texas, after an illness of about five years, from tuberculosis.

John Paxon, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1869; died at his home in Newtown, Pa., June 3, from cerebral hemorrhage, aged 65.

Thomas Watson Howard (Examination, Russell Co., Ala., 1888); died at his home in Girard, Ala., July 31, from uremia, after an illness of ten days, aged 65.

Samuel Wimpelberg, M.D. Jefferson Medical College, Philadelphia, 1883; of Yonkers, N. Y., died suddenly in Roosevelt Hospital, New York City, July 12.

Alexander M. Veasey, M.D. Kentucky School of Medicine, Louisville, 1886; formerly of Pittsburg, Pa., died at his home in Medora, Ind., July 28.

Marshall Dennis Kelley, M.D. University of Nashville (Tenn.) Medical Department, 1857; died at his home in Nashville, July 7, aged 76.

Thomas J. Prim (Examination, Clark Co., Ala.), 1884; died at his home in Salipta, Ala., recently, from fever, after a short illness.

John McMillan, M.D. McGill University Medical Faculty, Montreal, 1857; died at his home in Picton, N. S., May 1, aged 73.

James Dudley Mosher, M.D. College of Physicians and Surgeons, Baltimore, 1886; died at his home in Rawdons, N. S., May 4.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Then and Now.

In a letter recently received from the secretary of one of the most active county societies in an eastern state appear some observations which are worthy of repetition as emphasizing specifically a fact which has been repeatedly stated in a general way. Our correspondent says:

For all I heard while at medical college, I would never have known that the ethics of practice of medicine differed in the least from that of selling swine. Nor did I learn that there was such an association as the American Medical Association, nor that it published a journal. However, I had run across that grand book of Cathell's and did not know that something was required of a doctor. After locating and beginning practice, I became a subscriber to the ———— *Medical Journal.* One day, in reading an advertisement of a book, I saw a review copied from "THE JOURNAL of the American Medical Association." For the first time I knew there was such an Association, and I knew at once that I wanted to belong to it. I had no idea where the headquarters were, but thought that they might be in Philadelphia. I wrote to Philadelphia, and, of course, my letter came back. I finally wrote to ———— and found that the headquarters were in Chicago. I wrote to headquarters and asked what was necessary to become a member, and was told that I must be a member of the West Virginia State Medical Association. This was the first time that I had ever heard of such an association, and did not know how to join or whom to ask. Finally, I met Dr. ———— of ————, and asked him if he knew anything about the West Virginia State Medical Association and how I could become a member. He said there were only two doctors within miles of his house who were members and that he was one. He gave me the address of the secretary and endorsed my application, and in this way I became a member of the state association and of the American Medical Association.

Now, some one was to blame for this. The college should have drilled it into me that there were such associations and that it was my duty and privilege to become a member of them. The American Medical Association should have had some literature in my hands during my first student year. The State Medical Society should have sent me invitation after invitation to become a member as soon as I located in the state. They should have kept it up until I joined. I feel safe in asserting that no doctor in my county can say that he does not know how to become a member of his county medical society. Thinking of how little has been done for the average doctor, the wonder is not that we are better but that we are not worse.

Our correspondent's criticisms were unfortunately true. Medical colleges, even the best, formerly neglected the practical side of a student's training in professional matters. As a result, students were allowed to enter practice with no knowledge of their relations to their future patients, to their professional brethren or to the public. They knew nothing of what has been done by the organized profession in the past. They know nothing of the influence, possibilities or duties of the profession as a whole.

There has been some improvement, however, Since 1900 the American Medical Association each year has sent to every medical college enough copies of the Principles of Medical Ethics of the Association to supply one copy for each graduate of the school. In some of our more progressive colleges, prominent members of the faculty have given talks to the graduating classes on the practical side of medicine, the advantages of medical organization, etc. If our correspondent had been a member of the class of 1907 instead of 1897 he would have known something about the Principles of Medical Ethics and the American Medical Association before he graduated.

There has been a change, too, in medical organization work in the state. We venture to say that there are few, if any, reputable physicians now practicing in our correspondent's state who have not been invited to join their county and state societies. Along these lines there has been much improvement in the last five years. Of course, there is room for still more.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

MASSACHUSETTS Board of Registration in Medicine, State House, Boston, September 10-12. Secretary, Dr. Edwin B. Harvey, 159 State House, Boston.

IOWA State Board of Medical Examiners, Capitol Building, Des Moines, September 17-19. Secretary, Dr. Louis A. Thomas, Des Moines.

STATE BOARD REPORTS.

Reference Table of Published Reports of State Boards of Medical Examiners.

Some reports of examinations held in various states are given in this issue. To facilitate reference to other reports previously published, the following table will be found of value:

State.	Date of Exam.	Journal. Page.	Journal. Date.	With Examination Questions.
Arizona	January	1293	April 13	No
	April	265	July 20	No
	July	436	August 3	No
Arkansas	January	1973	June 8	No
	April	436	August 3	No
California	December	824	March 2	Yes
	April	350	July 27	No
Colorado	January	2199	June 29	No
	April	182	July 13	No
Connecticut	November	258	January 19	No
	January	349	July 27	No
	March	349	July 27	No
Delaware	December	365	January 26	Yes
	June	351	July 27	No
Dist. of Columbia	October	168	January 12	No
	January	1293	April 13	No
Florida	May	518	August 10	No
Georgia	October	638	February 16	No
	April	350	July 27	No
	May	350	July 27	No
Idaho	October	257	January 19	No
	April	436	August 3	No
Illinois	October	448	February 2	No
	January	1974	June 8	No
	April	350	July 27	No
	May	350	July 27	No
Indiana	October	724	February 23	No
Iowa	December	638	February 16	No
	May	518	August 10	No
	June	518	August 10	No
Kentucky	October	257	January 19	No
	April	1974	June 8	No
Louisiana	October	258	January 19	No
	May	264	July 20	No
Maryland	December	724	February 23	Yes
	June	351	July 27	No
Massachusetts	November	258	January 19	No
	March	181	July 13	No
	May	351	July 27	No
Michigan	October	168	January 12	No
Minnesota	January	726	February 23	No
	April	265	July 20	No
Mississippi	October	258	January 19	No
Missouri	November	825	March 2	No
Montana	April	1974	June 8	No
Nebraska	February	182	July 13	No
Nevada	November	258	January 19	No
	May	182	July 13	No
North Dakota	January	541	February 9	No
	April	1700	May 18	No
	July	436	August 3	No
Ohio	December	449	February 2	No
Oklahoma	December	825	March 2	Yes
Rhode Island	January	726	February 23	No
	April	1974	June 8	No
	July	519	August 10	No
South Carolina	June	264	July 20	No
South Dakota	January	1293	April 13	No
Texas	April	517	August 10	Yes
	October	449	February 2	No
Utah	January	726	February 23	No
	April	1974	June 8	No
Vermont	January	1544	May 4	No
Washington	January	182	July 13	Yes
West Virginia	November	259	January 19	No
	April	1974	June 8	No
Wisconsin	January	1974	June 8	No
	April	519	August 10	No
	June	519	August 10	No
Wyoming	December	365	January 26	No
	March	1629	May 11	No
	June	436	August 3	No

Minnesota June Report.—Dr. W. S. Fullerton, secretary of the Minnesota State Board of Medical Examiners, reports the written examination held at St. Paul, June 4-7, 1907. The number of subjects examined in was 15; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 68, of whom 50 passed and 18 failed. Seven reciprocal licenses were granted. The following colleges were represented:

PASSED.

College.	Year of Graduation.	Medicine.	Surgery.	Obst. and Gynecology.	Materia Medica.	Anatomy and Histology.	Physiology.	Chem., Tox. & Urinalysis.	Pathology & Bacteriology.	Prev. Med. & Med. Jurisp.	General Average.
Bennett Coll. of Ecl. M. & S.	1907	81	78	83	76	81	78	75	83	76	79.
College of P. and S., Chicago.	1907	74	77	75	75	75	76	60	94	77	75.8
College of P. and S., Chicago.	1907	82	83	82	77	80	80	80	88	70	80.2
Rush Medical College	1907	82	75	87	83	77	84	76	87	77	80.8
Northwestern University	1907	84	81	81	69	89	85	75	92	78	81.5
University of Minnesota.....	1907	83	82	81	75	93	86	76	88	78	82.4
University of Minnesota.....	1907	79	75	75	75	80	76	62	85	70	75.2
University of Minnesota.....	1907	83	81	91	88	80	81	80	95	79	84.2
University of Minnesota.....	1907	77	78	83	76	83	81	78	88	78	80.2
University of Minnesota.....	1907	78	75	84	82	91	84	78	84	79	79.4
University of Minnesota.....	1907	86	75	80	77	78	80	66	95	77	79.3
University of Minnesota.....	1907	88	82	79	67	86	80	76	91	78	80.7
University of Minnesota.....	1907	88	77	80	74	81	83	72	86	81	80.2
University of Minnesota.....	1907	88	85	94	76	77	90	75	90	82	83.
University of Minnesota.....	1907	85	82	83	71	82	83	70	83	80	79.8
University of Minnesota.....	1907	83	75	78	68	83	82	76	82	70	77.4
University of Minnesota.....	1907	85	76	84	86	82	80	81	89	79	82.4
University of Minnesota.....	1907	77	72	78	81	70	69	79	78	77	75.6
University of Minnesota.....	1907	80	80	80	68	72	75	60	81	79	75.
University of Minnesota.....	1907	78	80	80	66	75	75	77	86	77	77.1
University of Minnesota.....	1907	80	77	81	71	61	68	77	87	77	75.4
University of Minnesota.....	1907	71	70	83	87	79	78	65	79	78	76.6
University of Minnesota.....	1907	84	80	88	82	85	79	79	83	77	81.8
University of Minnesota.....	1907	79	71	83	67	79	76	77	88	77	77.4
University of Minnesota.....	1907	81	77	79	67	76	87	72	72	78	76.5
University of Minnesota.....	1907	81	78	80	77	58	75	80	71	76	75.1
University of Minnesota.....	1907	77	69	75	81	79	69	60	87	78	75.
University of Minnesota.....	1907	81	81	75	77	91	83	75	82	76	80.1
University of Minnesota.....	1907	72	70	79	72	94	81	63	72	78	75.6
University of Minnesota.....	1907	79	75	81	65	78	65	64	84	76	76.3
University of Minnesota.....	1907	82	75	81	73	75	82	78	86	80	78.7
University of Minnesota.....	1907	87	85	94	87	94	91	86	91	79	88.2
University of Minnesota.....	1907	86	83	88	90	79	93	77	91	82	85.4
University of Minnesota.....	1906	79	68	79	78	81	77	75	88	80	78.3
University of Minnesota.....	1906	83	78	81	72	77	75	68	84	77	77.2
University of Minnesota.....	1906	85	80	85	75	82	87	79	92	77	82.4
University of Minnesota.....	1906	91	83	92	83	91	79	78	81	81	83.2
Hamline University	1907	85	85	83	88	72	80	79	94	80	82.7
Hamline University	1907	80	77	80	80	66	76	71	71	74	75.
Hamline University	1907	79	82	77	84	83	84	79	92	75	81.6
Hamline University	1907	83	80	83	89	85	80	79	76	77	81.3
Hamline University	1907	85	78	79	85	77	83	79	85	80	81.2
Hamline University	1907	72	75	83	75	79	75	58	82	76	75.
Hamline University	1907	86	82	79	93	75	87	75	93	79	83.2
Hamline University	1907	77	78	73	89	72	75	71	86	75	77.3
Hamline University	1907	81	77	68	79	76	73	61	85	75	75.
Hamline University	1907	87	85	89	88	94	93	80	90	86	88.
Hamline University	1906	77	89	82	75	84	76	64	84	76	77.4
Hamline University	1906	80	76	66	75	83	75	67	86	75	75.8
Medical Coll. of Ohio.....	1890	90	82	90	84	87	90	71	70	80	82.6

FAILED.

University of Minnesota.....	1907	78	75	75	60	70	75	66	83	76	73.1
University of Minnesota.....	1907	80	61	72	69	75	69	53	77	74	70.
University of Minnesota.....	1907	69	75	78	85	80	64	42	74	79	71.7
University of Minnesota.....	1907	77	63	75	67	75	77	64	75	70.	71.4
University of Minnesota.....	1907	75	82	78	61	78	66	45	70	75	70.
University of Minnesota.....	1906	72	62	76	66	70	69	74	71	76	70.6
Hamline University	1907	78	70	65	67	76	67	71	67	77	70.8
Hamline University	1907	73	70	71	75	50	76	58	74	73	68.8
Hamline University	1907	75	64	71	71	70	60	72	59	77	68.7
Hamline University	1907	74	65	63	86	65	60	66	73	75	69.6
Hamline University	1907	72	69	44	72	88	82	66	75	78	71.7
Hamline University	1906	67	61	66	61	58	65	69	68	76	65.6
Hamline University	1906	68	75	71	63	75	80	56	70	74	70.2
Hamline University	1906	67	67	62	84	62	75	62	88	75	71.3
University of Buffalo	1885	68	73	63	75	76	75	50	65	79	69.3
University of Buffalo	1892	21	21	41	25	00	59	00	42	67	30.6
Eclectic Med. Inst., Cincinnati	1907	66	78	79	66	72	75	39	66	79	68.8
Univ. of Toronto, Ontario....	1906	54	51	59	59	78	75	66	53	75	63.3

LICENSED THROUGH RECIPROCITY.

College.	Year. Grad.	Reciprocity with.
Colorado School of Medicine	(1904)	Texas
Rush Medical College	(1871)	Iowa
Medical College of Indiana	(1885)	Nebraska
Sioux City College of Medicine	(1906)	Iowa
University of Michigan	(1905)	Iowa
Albany Medical College	(1887)	Wisconsin
Wisconsin College of P. and S.	(1905)	Wisconsin

The following questions were asked:

CHEMISTRY.

1. Define (a) specific gravity; (b) oxidation; (c) a base; (d) synthesis; (e) an element; (f) allotropy. 2. (a) Give the law of multiple proportions; (b) give the difference between a chemical compound and a mechanical mixture. 3. (a) Give a test for organic matter in drinking water; (b) what substances are commonly found in solution. 4. Explain the action of alcohol immediately applied to a carbolic acid burn. 5. Give metals of the alkali group, with symbols. 6. (a) Give freezing point of blood; (b) give test for blood pigment; (c) how do you estimate the hemoglobin. 7. (a) What is the chemical composition of the different urinary calculi; (b) name members of the purin group. 8. (a) Give a qualitative test for lactic and hydrochloric acids in stomach contents; (b) what is meant by total acidity. 9. (a) Name the carbohydrates found in the urine; (b) give a color test for diabetic blood. 10. Give qualitative test for uric acid; (b) give qualitative test for urea.

SURGERY.

1. Give symptoms and differential diagnosis of dislocation of the ankle. 2. Give differential diagnosis and treatment of fracture of lower end of femur. 3. Give etiology, pathology and clinical course of acute infective osteomyelitis. 4. Give differential diagnosis, clinical course, and treatment of gonorrheal arthritis. 5. Give symptoms and differential diagnosis of vesical calculus. 6. Give technic of circumcision. 7. Define sapremia, septicemia and pyemia. 8. Give method of ligating brachial artery at middle of arm and name structures to be avoided. 9. Give treatment of corneal ulcer. 10. Describe trachoma and give treatment.

OBSTETRICS.

1. Describe the superior strait and give its dimensions. 2. Give classification of labor as to presentation and position. 3. Give treatment for the nausea and vomiting of pregnancy. 4. Give diagnostic signs of death of fetus in utero. 5. Give diagnosis and management of hydrocephalus in labor. 6. Enumerate the various malpresentations and describe your management of a case of shoulder presentation. 7. Give your management of a case of complete placenta prævia, the os being rigid and the cervical canal not readily penetrated. 8. Give etiology and treatment of phlegmasia alba dolens. 9. Give causes and treatment of subinvolution of the uterus following confinement. 10. Give indications for craniotomy, Cesarean section and Porro operation.

MATERIA MEDICA.

1. Incompatibility: (a) explain the term as used in materia medica; (b) give general principles. 2. (a) What is carbolic acid; (b) criticise the following:

℞. Acid carbolic, liq. ..... Drachm. ss
Sodii bicarb ..... Drachm. v
Gentian. fluidext. ..... Oz. i
Aq. aurantii flor., q. s. ad ..... O. i
M. Sig.: Half an ounce in a little water to be taken three times a day before meals.

3. Cocain: (a) Source? (b) Physical properties? (c) Local action: On the eye (conjunctiva and pupil?) Hypodermically? (d) Constitutional action: On nervous centers? On respiration? On temperature? (e) Routes through which it enters the circulation? Single dose to exceed which is dangerous? 4. (a) Name two reliable teniacides. State the preparation of each commonly used and give dosage; (b) name three reliable heart stimulants; (c) three hypnotics; (d) a drug which stimulates reflex activity of the spinal cord; (e) three depressants of spinal cord activity. 5. Give the derivation of—(a) arbutin; (b) apiol; (c) apomorphin; (d) brucin; (e) cicutin; (f) eserin; (g) hydrastin; (h) emetin; (i) scopolamin; (j) veratrin. 6. Veratrum viride: (a) Source? (b) Chief physiologic action? (c) Official preparations with dose? (d) Principal alkaloids? 7. Give the average adult dose of the official fluidextracts in general. Name the exceptions in which this would be a dangerous dose and state average dose of each exception. 8. (a) What is massa hydrargyri? Mercurous chlorid? Mercuric chlorid? (b) Explain how ferrous carbonate is obtained in Blaud's pill. 9. Name the medicines which have become established as specifics and the disease in which each is so used. 10. State a safe dosage rule where prescribing for children.

PRACTICE OF MEDICINE.

1. Give causes and symptoms of gastralgia. 2. Describe a case of multiple neuritis. 3. Describe seborrhea oleosa; seborrhea sicca. 4. Give symptoms and treatment of acute prostatitis. 5. Give causes and symptoms of pulmonary emphysema. 6. Give causes and symptoms of acute endocarditis. 7. Give general management of sunstroke. What are its most important sequelæ? 8. Give general causes and symptoms of neurasthenia. 9. Give symptoms of chronic parenchymatous nephritis, including results of chemical and microscopic analysis of urine. 10. Name at least four of the principal diseases in which we usually find enlargement of the spleen, not including primary disease of the organ itself.

GYNECOLOGY.

1. Give diagnosis and treatment of pyosalpinx. 2. What abnormal condition of the uterus may produce dysmennorrhea? 3. Enumerate all the subjective and objective symptoms of tubal pregnancy. 4. Describe your management of a case of abortion with severe hemorrhage. 5. Describe treatment for posterior displacement of uterus.

DISEASES OF CHILDREN.

1. Give etiology, symptoms and treatment of mycotic stomatitis. 2. Give etiology and symptoms of rachitis. 3. Give pathology and symptoms of infantile palsy. 4. Enumerate causes of infantile convulsions. 5. Describe a case of spina bifida.

TOXICOLOGY.

1. (a) Define "poison," "antidote;" (b) classify antidotes according to action; (c) give composition of an effective antidote to be used where no definite information can be obtained as to poison taken, and explain action. 2. Resolve treatment of poisoning into routine steps in the order of importance. 3. Give symptoms and treatment of poisoning by strychnin. Give physiologic test where strychnia is suspected as the lethal agent. 4. Name three commercial articles in common use which are frequent sources of arsenical poisoning; (b) symptoms of; (c) antidotes. 5. Describe Reinsch's test and the method of differentiating between arsenic, mercury and antimony. 6. How is death produced in poisoning by aconite? by digitalis? by morphin? by hydrocyanic acid? by nicotin? 7. Given a poisonous dose of morphin in a susceptible subject, describe the symptoms of poisoning in order of occurrence. 8. Describe fully how you would treat such a case. 9. Differentiate between alcoholic narcosis, morphin poisoning and cerebral hemorrhage. 10. What are ptomains?

MEDICAL DIAGNOSIS.

1. (a) Name the casts in the urine; (b) give their significance; (c) give the clinical sognificance of albuminuria. 2. Differentiate

general tuberculosis and typhoid fever. 3. Given a case of aortic stenosis, how would you know it? 4. Show value of a leucocyte count in a questionable case of typhoid fever or appendicitis. 5. In what diseases would you use the microscope to make or confirm a diagnosis. 6. Differentiate the different throat exudates and state with what diseases they are commonly associated. 7. In a case of edema of the legs, what would you look for? Show by elimination. 8. (a) What is: Kernig's sign, von Graefe's sign, Dietl's crisis, Argyll-Robertson pupil, Koplik's spots, Romberg's symptom, McBurney's point? Give significance and value in diagnosis. (b) Give diagnostic value of lumbar puncture. 9. Name the differential diagnostic points in "paresis." 10. (a) What conditions simulate gallstone colic and how do you differentiate? (b) Diagnostic value of the determination of hydrochloric acid in stomach contents.

MEDICAL JURISPRUDENCE.

1. (a) What is meant by presumption of death and of survivorship? (b) How are such questions usually decided? 2. What is the cause of death following burns? 3. What are the most characteristic signs of death by drowning? 4. How do you distinguish between intellectual and moral insanity? 5. Give some conditions legally justifying the induction of premature delivery.

PREVENTIVE MEDICINE.

1. What in your opinion is the best procedure to prevent the spread of tuberculosis? 2. Describe some practical method whereby a tubercular patient, confined to the house, may get a good supply of pure air. 3. How are the following diseases usually transmitted: Typhoid fever, yellow fever, malaria, tuberculosis and diphtheria? 4. (a) What are the dangers from impure drinking water? (b) Give practical method for obtaining pure water for the home. 5. What in your opinion is the most sanitary method of heating and ventilating a dwelling in this climate during the winter season?

PATHOLOGY.

1. What are the pathologic changes in the blood in (a) pernicious anemia, (b) chlorosis. 2. Give gross and microscopic appearance of interstitial hepatitis. 3. Give pathology of cystic ovary. 4. Give forms and pathology of appendicitis. 5. Give pathology of poliomyelitis.

BACTERIOLOGY.

1. In what infectious diseases is immunization of value. 2. Describe the malarial organism. 3. Describe and give method of staining (a) tubercle bacillus, (b) gonococcus. 4. Describe Widal's test and how it is made. 4. Describe method for bacteriologic diagnosis of diphtheria.

ANATOMY AND HISTOLOGY.

1. (a) Describe the kidney; (b) give the histology of the kidney. 2. (a) Describe the spleen; (b) give the histology of the spleen. 3. (a) Describe the thyroid gland; (b) give the histology of the thyroid gland. 4. If you were to remove the superficial layer of lymphatics from the neck, what structures would you meet and what would you unavoidably sever in so doing? 5. Describe the triangles of the neck. 6. Describe the muscles of respiration. 7. Describe the saphenous vein and give its relations. 8. Describe the internal iliac artery and give its relations. 9. Describe the external iliac artery and give its relations. 10. Describe the brachial artery and its relations.

PHYSIOLOGY.

1. Describe the functions of the liver and the uses of the bile. 2. Explain the secretion of urine by the glomeruli and renal epithelium. 3. Describe in detail a complete cardiac revolution and enumerate the causes of the normal heart sounds. 4. Describe the formation of a blood clot. 5. What is the function of the lymphatic system? What is (a) lymph and (b) chyle? How is the movement of the lymph maintained? 6. Describe the change which the blood undergoes in passing through the capillaries of the skin and lungs. 7. What are the sources of heat in the animal body and by what means is it regulated? 8. Explain the physiologic phenomena that take place in "ankle clonus." 9. Describe the changes the food (albuminous foods, starches, and fats) undergoes in the duodenum and explain how it is absorbed by the lacteal and portal vein. 10. What is the function of the spinal cord? What centers are located in it? Note: Credits will be given for all diagrams used in explaining questions.

California Examining Board Report.—A number of interesting points are to be found in Dr. Dudley Tait's report to the California State Medical Society last April (*California State Journal of Medicine*, June, page 128). Control of matriculation requirements in California are where they properly belong, in the hands of the State Board of Medical Examiners. Dr. Tait says: "There is no more radical method of exterminating the purely mercenary medical college than by exacting of all matriculants a high standard of preliminary education." One California college had, in 1905-6, 42 freshmen, but in 1906-7, when an examiner from the board passed on the credentials of matriculants, the standard of requirement being the same, the number of freshmen was 7, a reduction of 83.3 per cent. Regarding the laws of California regulating medical practice, the act of 1901 was obtained only by allowing a special act for the osteopaths. The result was that, although the number of licentiates for the regular, homeopathic and eclectic schools was materially reduced, the osteopathic board registered large numbers and these without examinations. Further, among those registered by the osteopathic board there were many who had failed ignominiously before the medical board. Only recently the osteopaths declared openly that their ambition was "to be known as practitioners of medicine in the broad sense of the term." While higher requirements were being demanded of the three schools of medicine, there was a wide door by which the illiterate could enter into the practice of medicine. Hence the new law, although it was not what could be termed ideal, was imperatively demanded. Dr. Tait rightfully urges the cooperation of all reputable physicians with the examining board toward the enforcement of the new law against illegal practitioners. The experience of California in regard to the osteopaths emphasizes what is now coming to be better appreciated: That there should be no class legislation or special privileges for any individual who desires to practice medicine in any form. Let them all enter by the same door and comply with the same standards of preliminary and medical education.

Texas June Report.—Dr. T. T. Jackson, secretary of the Texas State Board of Medical Examiners, reports the written examination held at Austin, June 25-27, 1907. The number of subjects examined in was 12; total number of questions asked, 144; percentage required to pass, 75. The total number of candidates examined was 93, of whom 73 passed, including 31 non-graduates, and 20 failed, including 17 non-graduates. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Howard University, Washington	(1907)	78.
College of P. and S., Chicago	(1905)	80.
Keokuk Med. Coll., College of P. and S.	(1906)	87.
Hospital Coll. of Medicine, Louisville	(1905) 80; (1907)	80, 80.
Kentucky School of Medicine	(1894)	75.
Tulane University of Louisiana	(1907) 78, 78, 79, 79.7,	80, 82.
University of Iowa	(1889)	84.
Maryland Medical College	(1905) 86.5; (1907)	87.5
St. Louis University	(1907)	84, 86.5
St. Louis College of P. and S.	(1898)	79.
University of Nashville	(1907)	82.
Vanderbilt University	(1900) 83; (1907)	85, 91.4
Memphis Hospital Medical College	(1898) 75; (1905)	83.
University of Texas (1904) 80; (1906) 92; (1907) 84, 84.8, 86.5, 87, 87.5, 87.6, 88, 88.5, 89, 89, 89.6, 90, 90, 91, 94.		

FAILED.

Kentucky University	(1906)	68.5
Flint Medical College	(1907)	67.7
Meharry Medical College	(1906)	69.7

Pharmacology

ANOTHER CONSUMPTION CURE (?).

The C. S. Roberts and Hydrocine Attempt to Exploit the Tuberculous.

We have had occasion to comment on the diabolical cruelty exhibited by cancer fakers in deluding their victims with false hopes and by inducing them to delay such treatment as might be effective until too late. Next to cancer, tuberculosis offers the most promising field for such vampires, for it is a disease in which the patient is always hopeful and always ready to say that he is better; just such a condition as makes him an easy victim for those who are without principle and ever ready to prey on the hope which springs eternal in the human breast.

During the past three months, physicians all over the country have been receiving postal cards announcing the discovery of a new and wonderful remedy for consumption. The card is signed, "C. S. Roberts, M.D., Member N. Y. State Medical Society and American Medical Association." It is to be regretted that what Roberts says regarding his membership is true. Until within the last few months Roberts lived at Syracuse, N. Y., and is a member of the Onondaga County Medical Society and consequently of the Medical Society of the State of New York. Last December he became a member of the American Medical Association. This was just before his removal to New York City, and he evidently obtained this membership because he was going into this wretched business and wanted to use his membership as an apparent guarantee of his ethical standing. As soon as the Onondaga County Medical Society discovered the business Roberts had gone into he was asked to resign, but this he refused to do. Hence it became necessary for the society to go through the legal form of trial before expelling him from the society. We understand that his trial can not come off until September, and that Roberts is fighting to retain his membership.

According to the postal card, Roberts is "just commencing to introduce to the medical profession (on strictly ethical

lines)", this is put in parenthesis probably for emphasis, "a positive cure for tuberculosis in any form." "This discovery," he says, "is the result of fourteen years' scientific study and experimentation," but so far as we have been able to learn, Roberts has not been noted as performing any remarkable cures of tuberculosis in Syracuse, nor was it known that he was using this wonderful remedy. The last paragraph of the postal card is supposed to be a clincher:

"Doctor, a trial will prevent your tubercular patients from saying your neighbor doctor is curing his patients in a few weeks right at home, while you are sending them at great expense in time and money to the remote resorts for consumptives."

Judging from the circulars, Roberts seems to have gone to New York to help exploit a nostrum—hydrocine—put out by the "Medical Food Co.," and evidently the postal card is the initial move in a scheme to exploit the medical profession.

Incidentally, it might be said that some two or three years ago Roberts was interested in a scheme to work the doctors by getting them to invest in a water still, and the circular letters he sent to physicians at that time sound very similar to the circulars he is now sending out puffing this specific for consumption. In one of the "still" letters[1] he states that he made $3,200 in less than two months on an investment of $300. Evidently something must have happened to the "still" business, for such a man would hardly give up a business netting $2,900 in two months, even to exploit a remedy that is to relieve the human race of one of its most fatal diseases.

The recipient of the postal card above referred to is told that if he will send 15 cents in postage stamps he will be furnished with the "theory, literature and abundant testimonials and a $3 size sample to prove what we say." This part of the agreement is lived up to. The theory is furnished, plenty of literature, including testimonials, and also a box of the tablets. The theory ought to take with an ignorant layman, and the literature certainly is promising and hopeful enough to convince the most desperate individual that he could be cured.

The wonderful remedy is known as hydrocine—hyper-oxidized hydro-carbon. The circular tells us that "the physician is unquestionably entitled to a full, frank and candid statement of the composition, nature and character of any and every medicinal preparation he is asked to prescribe." This sounds excellent, and then follows the formula:

FORMULA.

Hyper-oxidized hydro-carbon (vegetable)	28	gr.
Pure Rock Sugar	8	gr.
Powdered Pancreatin	.1-20	gr.

The oxids are liberated in the stomach and thrown into the circulation.

It is barely possible that there is somebody on this mundane sphere that can tell what "hyper-oxidized hydro-carbon (vegetable)" is. Most of us have a knowledge of pure rock sugar and powdered pancreatin, but when we come to the other ingredient, we fear the majority of us would have to give it up.

However, we find this in the printed circular:

"The hydro-carbon is extracted from oils of cinnamon, coniin, peppermint, spruce, myrtle, chekan, marrubium, myrrh, turpentine and thymol, is then condensed, and positively all toxic properties are eliminated. The residue is hyper-oxidized, predigested by pancreatin, mixed with a small quantity of powdered rock sugar and pressed into 30 grain tablets."

There we have it. And when we have it, what have we?

The literature is of the usual quackish order, the optimistic kind that will make the physician who does not stop to think feel that it is something worth trying at least.

Of course, there are testimonials—several of them. What nostrum was ever introduced, whether to the public or to the profession, that did not have testimonials ready? Many of the testimonial givers we have not located, but they may be genuine for all that. One who speaks in high praise of the nostrum is Dr. O. P. Barber of Saginaw, Mich., who is given as "professor of surgery, Michigan College of Medicine and Surgery, Detroit, Mich." Dr. Barber's success is really remarkable when it is considered that he disregarded Dr. Roberts' instruction to select an incipient case, for he seems to have taken one with extensive cavities, in the third stage, a man with undoubted complications, whose sputum was so offensive that the doctor asked him to expectorate in the closet in the next room. He also neglected to give a "good liver cathartic at the start," as the circular advises, but put him at once on hydrocine. Possibly Dr. Barber did not carry out the full instructions because he did not get them from the right source, for he tells us that he was led to use the remedy on the advice of a layman, from whom he seems to have obtained his early supplies. However, notwithstanding these palpable violations of the correct method of using the preparation, this unpromising patient recovered to such an extent that the cavities all filled up and over 40 per cent. of the patient's lung consists of scars. This was proved by the *x*-ray. Dr. Barber had other equally remarkable cures.

Another name that is often seen in a certain class of literature appears in connection with this hydrocine. This is Dr. J. W. P. Smithwick, of LaGrange, N. C. Dr. Smithwick, however, is given to writing very favorably of preparations that are not in the Pharmacopeia, such as glycobenphene, borobenphene, tongaline, bromidia, maltopepsine, ecthol, phenalgin, dermapurine, Angier's petroleum emulsion, thialion, etc., for we find his testimonials in the advertising literature of all of these articles. Dr. Smithwick, who, by the way, is given as "first vice-president of the American Congress on Tuberculosis," and therefore should be an authority on the subject, seems also to have had a most notable experience, for every patient treated recovered, and his cases included not only pulmonary tuberculosis, but also hipjoint disease, lupus vulgaris, etc., and of the worst sort.

When we began to receive Roberts' postal cards and were asked to show up the scheme, we thought the card itself was so quackish that no intelligent physician would risk even the 15 cents. It seems, however, that some have been "almost persuaded," and we have been astonished to receive letters asking if it is not possible that this nostrum may do what its promoters say it will do, evidently feeling that possibly, after all, the long-looked-for remedy has been discovered. How foolish! If Roberts and the promoters (who are, perhaps, making him a cat's paw) really had a remedy that would do what they claim this one will do, there would not be words in the English language strong enough to characterize their villainy and inhumanity in keeping it secret. If, on the other hand, the stuff is a fraud, then it is simply another instance to add to the list of attempts to humbug the public, and to make money out of their suffering. Either horn of the dilemma is certainly reprehensible, and to have one who is supposed to have once been a reputable physician mixed up in it should be a source of regret to every member of our profession.

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1. The following is a copy of a circular letter, imitation typewritten, sent out by Roberts. The physician to whom it was addressed, said: This is the third letter I have received from Dr. Roberts in the past few weeks, none of which I have answered."

Syracuse, N. Y., Nov. 26, 1904.

Dear Doctor:—My letters to you of recent date may have found you busy with your own affairs; they may have found their way into your waste basket (never to return with any profit to you). However, permit me to say I meant well and hoped to favor you.

You may be interested in knowing that my profits since being interested in this company (September 29) on an investment of $300 have been $3,200.

I will state for your information, Doctor, that one of the four ways in which to make money on this proposition by associating with this company to the extent of $300 to $500 (and this amount is all you can invest with them) is by the sale of their Automatic Water Still in your county by any method you may choose to adopt for a period of 15 years.

This Still is the greatest household device I ever saw; it requires no more room than, and can be used as, an ordinary tea-kettle and does not require as much watching and care. The water is boiled and the steam condensed in the presence of pure hot air, giving the purest pure and live water, entirely free from the taste of ordinary boiled or distilled water. I know of no water for table use so nice and pleasant to the taste. The Still is capable of distilling several gallons per day. The price is reasonable and within the reach of everybody, and one should be in the home of every family in your town and you can do your patients no greater favor than recommending one of these to them.

This Water Still has been endorsed by every board of health where sold and by all physicians who have seen it.

Why not accept the company's liberal offer to pay your fare one way for the purpose of an investigation. If this business was not high class and worthy they certainly would not make you such terms.

If at all interested, please let me hear from you for further information, or I will arrange for your transportation to Rochester.

Very truly yours, C. S. ROBERTS.

Current Medical Literature

AMERICAN.

Titals marked with an asterisk (*) are abstracted below.

Medical Record, New York.

August 3.

1 Evolution of Gastroenterology. H. W. Bettmann, Cincinnati, O.
2 *Separation of the Urine of Two Kidneys. G. Luys, Paris.
3 *Primary Dysmenorrhea. M. Glasgow, New York.
4 *Eye Symptoms of Sporadic Trichinosis. F. J. Parker, New York.
5 Venereal Prophylaxis. R. S. Wilcox, Providence, R. I.
6 Need of Earlier Diagnosis. J. N. Hall, Denver, Colo.
7 *Two Unusual Cases of Rectal Hemorrhage. C. B. Kelsey, New York.

2. **Separation of Urine.**—Luys describes the endovesical separation of the urine devised by him some years ago, and compares it with the less useful, more difficult and harmful method of catheterizing the ureter.

3. **Primary Dysmenorrhea.**—Glasgow directs attention to the presence of disturbances connected with menstruation, without any lesions of the genital organs, which are referred to the sedentary life led by city-bred women. He claims that prophylaxis should be begun in childhood, and outlines briefly the treatment that can be carried out with benefit in such cases. This consists of intermenstrual hot douches, exercise, nutritious food and tonics. Glasgow has found the internal administration of hydrastis and nux vomica particularly useful.

4. **Eye Symptoms of Sporadic Trichinosis.**—According to Parker these symptoms are edema of the eyelids, associated with conjunctival hyperemia, tenderness of the globes, with pain on motion, ecchymosis under the conjunctiva, diplopia, neuro-retinitis and hemorrhages.

7. **Rectal Hemorrhage.**—Kelsey reports two cases, one of which almost terminated fatally, of hemorrhage following an attempt to treat hemorrhoids by means of an injection method, in one case, and under local anesthesia with water, in the other. Kelsey says that the danger of bleeding is inherent in any method which consists in first rendering the parts to which ligatures are to be applied artificially edematous to the point of actual devitalization. He condemns roundly both of the methods employed in the cases reported.

New York Medical Journal.

August 3.

8 *Carcinomatous Metastases in Unusual Sites. G. L. Peabody, New York.
9 Intradural Resection of Posterior Roots of a Number of Spinal Nerves for Relief of Intractable Pain. G. W. Jacoby, New York.
10 Etiology and Treatment of Pruritus Ani. H. A. Brav, Philadelphia.
11 *The Leucocytes in Dengue. E. B. Vedder, Manila, P. I.
12 Present status of the Methods of Physical Therapeutics. H. F. Wolf, Philadelphia.
13 Examination of the Eyes of Pupils in the Public Schools of Memphis. J. L. Minor, Memphis, Tenn.
14 *Postoperative Treatment of Malignant Disease of the Buccal Cavity. J. S. Wight, Brooklyn.
15 Treatment of Gonorrheal Epididymitis. J. M. Edwards, Mankato, Minn.

8. **Carcinomatous Metastases.**—In the case reported by Peabody, the organ primarily affected was the right breast. There were numerous metastases in the lungs, kidneys, thyroid and suprarenals, but the unusual locations were in the pia of the brain and cord, and in peripheral nerves. The point of secondary interest in the case was the occurrence of pigmentation of the skin, confined chiefly to the skin f the front of the chest, and assumed to have been caused by the disease of the suprarenals.

11. **Leucocytes in Dengue.**—Vedder found that leucopenia is a constant feature of dengue, and that there is a marked reduction in the polymorphonuclear count early in the disease. Coincident with this decrease in polymorphonuclears is an increase in the small lymphocytes, and a gradual, though much more moderate, increase in the large lymphocytes. There is a similar gradual but slight increase in the eosinophiles.

14. **Postoperative Treatment of Cancer of Mouth.**—Wight claims that recurrent malignant growths of the mouth can be kept under control by injecting carbolized petrolatum (from 3 to 5 per cent.) into the growth. It is hyperisotonic with the juices of the body and the blood serum; reduces inflammation; cuts down edematous granulating surfaces; is strongly germicidal, and remains in contact with surfaces acting continuously through a long period of time. He reports three cases; two of the patients died from other causes without any recurrence of the tumor, and five months after the operation there was no sign of recurrence in the third case. Wight says that when removal of the upper jaw is necessary this may be done readily by making an incision from the angle of the mouth to the malar bone on either side, and cutting through the cartilage of the nose, so as to raise the nose in this superior flap. This method gives the best cosmetic results.

Boston Medical and Surgical Journal.

August 1.

16 Past, Present and Future of Tuberculosis. F. C. Shattuck, Boston.
17 *Daily Care of Tuberculous at a General Hospital as an Aid to Solving Local Tuberculosis Problems. A. K. Stone and C. Floyd, Boston.
18 Neurologic and Psychiatric Diagnosis. L. F. Barker, Baltimore.
19 Historical Development and Relative Value of Laboratory and Clinical Methods of Diagnosis. R. C. Cabot, Boston.

17.—See abstract in THE JOURNAL, June 1, 1907, page 1893.

Lancet-Clinic, Cincinnati.

August 3.

20 *Consideration of Retrodisplacements of Uterus in Relation to Pregnancy. C. W. Barrett, Chicago.
21 *Non-lithogenous Obstruction of Biliary Ducts. A. H. Cordier, Kansas City, Mo.
22 *Comminuted Fracture of Left Frontal Bone. P. C. Layne, Ashland, Ky.

20.—See abstract in THE JOURNAL, Dec. 1, 1906, page 1849.

21.—See abstract in THE JOURNAL, Dec. 8, 1906, page 1945.

22. **Fracture of Os Frontis.**—Layne reports the case of a man who was struck over the left eye by a piece of a broken emery wheel. The man was rendered unconscious, and a nearby physician simply dressed the wound after thorough cleansing. Thirty-six hours after the injury the man was still unconscious. Layne examined the wound and found that the superior maxilla had been comminuted and that the brain had been pulpified in the left frontal region. After clearing out all clots and broken-down brain tissue there remained a cavity in the frontal region of the brain large enough to admit a full-sized orange. A severe infection of the cranial cavity followed, but not a suppurative meningitis. After thorough antiseptic treatment the patient finally recovered, and about five weeks after the injury left the hospital in perfect condition mentally and physically, with no after results from either the injury or the suppuration in the cranial cavity.

Kentucky Medical Journal, Bowling Green.

August.

23 Medical Milk Commissions and Certified Milk. H. E. Tuley, Louisville, Ky.
24 President's Address, Kentucky Valley Med. Assn. J. R. Carroll, Campton.
25 Compound Fracture of the Leg. J. V. Prewitt, West Point.
26 Treatment of Typhoid. J. P. Keith, Hopkinsville.
27 Management of Normal Labor. H. D. Rodman, Bardstown.
28 *Cysts of the Pancreas. T. S. Lewis, Lexington.
29 *Poison in Cigarettes. S. S. Amerson, Sullivan.
30 Nervousness and Faith. T. Perkins, Tribune.
31 Diagnosis of Primary Blood Disease. B. J. O'Connor, Louisville.
32 Conservatism in Surgical Treatment of Injuries to Extremities Sustained in Railway Accidents. A. O. Sisk, Earlington.
33 Prophylaxis in Gynecology. T. C. Holloway, Lexington.
34 Summer Diarrhea. J. F. Young, Monticello.

28. **Cysts of Pancreas.**—Lewis reports the case of a woman, who first complained of stomach trouble about 15 years ago. She had so-called bilious attacks every two or three months, attended with vomiting of yellow fluid of intensely bitter taste. These attacks were accompanied by cramps in the stomach region. The appetite was always good, but just before these attacks it was ravenous. Six months previous to seeking medical advice the patient began to notice a fulness in the region between the lower margin of the costal arch and the umbilicus. Then she began to have attacks of what appeared to be gallstone colic. A number of gallstones the size of the end of the little finger were passed, but the patient did not get relief from all the symptoms. An operation was advised and was done. The gall bladder was found enlarged and full of stones. The tumor noted in the region of the umbili-

cus proved to be a cyst of the pancreas, containing about three quarts of a thin, watery fluid, of a yellowish-green color. The sac was washed out and stitched to the edges of the wound. Convalescence was uneventful, except for the enormous quantities of fluid that came from the sac, and the digested, moth-eaten appearance of the fat wall about the mouth of the fistula. The patient eventually made a complete recovery.

29. **Poison in Cigarettes.**—Amerson maintains that the poison in cigarettes is manufactured in the cigarette as it is smoked. He says that in the smoking of the cigarette carbon monoxid is formed, and the inhalation of this gas is what does the harm. The smoke from cigars and pipes is so strong that it can not be inhaled. This is not true of the cigarette. Amerson says that he has never known or heard of a cigarette smoker being hurt who did not inhale the smoke. He thinks that the evidence is conclusive that the poison in cigarette smoking is due to the smothered fire forming carbon monoxid, and this being inhaled, little by little, kills the smoker.

Ohio State Medical Journal, Columbus.

July.

35 Endonasal Surgery. A. B. Thrasher, Cincinnati.
36 Metaphysics of Medicine. S. Mumaugh, Lima.
37 *Methods of Advancement of Eye Muscles. J. E. Cogan, Cleveland.
38 Result of the Examination of the Eye, Ear, Nose and Throat of the Children in the Public Schools of Springfield, O. C. L. Minor, Springfield.
39 Dichotomy. J. C. Larkin, Hillsboro.
40 *Curability and Treatment of Tabes Dorsalis. H. H. Drysdale, Cleveland.
41 *Seventeen Complete Prostatectomies. W. D. Hamilton, Columbus.
42 *Advance in Diabetic Therapy. L. A. Levison, Toledo.

37. **Methods of Advancement of Eye Muscles.**—Cogan describes a new advancement operation, which he believes is an improvement on the operations of Worth and Stevenson. He says that the operation has the advantage of eliminating the danger of perforation, and its possible consequences, and that it is easy of execution. There is no unnecessary constriction or strangulation of the muscle, and no posterior stitch to pull it forward.

40. **Curability of Tabes Dorsalis.**—Drysdale endorses Fraenkel's physiologic exercises in the treatment of tabes. A brief description is given of this method.

41. **Prostatectomy.**—Hamilton reports 17 prostatectomies, three having been done through the perineum, and the remainder suprapubically. There were four deaths in the series. One patient died of suppression, one from uremic intoxication, and two from urinary sepsis and exhaustion. No mention is made as to the operation done in the fatal cases.

42. **Diabetes.**—Levison considers the dietetic treatment of diabetes the most successful, claiming that it will give results in excess of drug treatment.

Therapeutic Gazette, Detroit.

July 15.

43 Management of Pregnancy. R. Peterson, Ann Arbor, Mich.
44 Laceration of the Genital Tract and their Repair. F. C. Hammond, Philadelphia.
45 *Development of Occult Finger Prints. R. L. Pitfield, Philadelphia.
46 Hot and Cold Applications in Medicine. A. E. Blackburn, Philadelphia.
47 *Formic Aldehyde Disinfection by Means of Potassium Permanganate. E. M. Houghton and L. T. Clark, Detroit.
48 *Infant Feeding. S. A. Visanska, Atlanta, Ga.
49 *Effective Formula for Catarrhal Cholangitis and Its Congeners. C. G. Davis, Chicago.

45. **Occult Finger Prints.**—Pitfield exposes the print to the fumes of osmic acid, so that the lines stand out as black as ink. He says it is sufficient to rub the thumb on the nose before making the print, and if the hands are not washed frequently there is enough sebaceous material on them to make faint prints after twelve hours' exposure of the prints to osmic acid. Mineral oils he found but slightly susceptible to osmic acid.

47. **Formalin Permanganate Disinfection.**—Houghton and Clark believe that most thorough disinfection is accomplished by adding potassium permanganate to formaldehyd because the whole volume of gas and moisture is liberated during a very short time.

48.—See abstract in THE JOURNAL, May 4, 1907, page 1545.

49.—This appears to be a write-up of probilin pills or some similar preparation.

Medical Fortnightly, St. Louis.

July 10.

50 Reduction of the Tip Tilted Nose. C. C. Miller, Chicago.
51 *Medical Expert Testimony from the Viewpoint of a Physician. R. B. H. Gradwohl, St. Louis.
52 *Medical Expert Testimony from the Viewpoint of the Bar. I. V. Barth, St. Louis.
53 *Expert Testimony. D. G. Taylor, St. Louis.
54 The Criminal Law and the Medical Expert. A. N. Sager, St. Louis.

51. **Medical Expert Testimony.**—Gradwohl urges the proper teaching of legal medicine in medical colleges. This, he says, will make the practitioner of medicine acquainted with the subject so as to enable him to make a credible and creditable witness when he is brought into court, and it will also train him to assume the important position of legal autopsy physician to county coroners. Gradwohl also suggests that some changes in our system of jurisprudence will place the medical expert in the honorable position which he ought to occupy.

52. **Id.**—Barth says that it is not the part of our jurisprudence to eliminate the medical expert witness, but rather to make him more effective in the judicial trial. To accomplish this it is not necessary to change fundamentally this system of jurisprudence, but rather to perfect the present methods. Let the hypothetical question be subjected more completely to the discretion of the trial court, which should require that it be framed to the end of bringing the matters involved clearly and concisely before the jury. The court should exercise its privilege and right to appoint an expert, or experts, who may testify to the end of elucidating the matters theretofore in evidence. Barth believes that it is not necessary, nor, in some cases practical, to resort to the panel of expert jurors, or to the board or commission of experts, nor is it wise to deny the parties to the suit the right to summon their own witnesses. On the other hand, he thinks that the court should limit the number of these so summoned, and should interrogate carefully the expert or experts, summoned and paid by the court, on all the matters testified to by those experts introduced by the parties litigant. And, finally, there should come to the lawyer and to the physician a deep appreciation of their sense of duty—duty owing to themselves and to the community looking to an orderly procedure and to the end of justice.

53. **Id.**—Taylor suggests that an approach to an effective remedy along these lines might be to have the expert triers of the particular fact after a full examination of witnesses submitted by both sides report to the jury through a representative their conclusions and then under a rule of evidence provide that no other opinion testimony should be permitted. In this way the jurors would only receive the conclusion of the commission and the conflicting opinion testimony would be eliminated; the jurors would be left ultimately to decide all questions of fact and the party litigant would have had the benefit of producing his witnesses and cross-examining his opponent's witnesses. This latter plan Taylor offers simply as a suggestion to be considered and discussed by those who are trying to lead us out of our difficulties.

American Journal of Medical Sciences, Philadelphia.

August.

55 Signs of Pre-Dementia Præcox. S. E. Jelliffe, New York.
56 *Surgical Treatment of Goiter. M. B. Tinker, Ithaca, New York.
57 *Tendon Transplantation in Congenital and Acquired Talipes. A. P. C. Ashhurst, Philadelphia.
58 *Care of Gunshot Wounds of the Abdomen. G. T. Vaughan, Washington, D. C.
59 Causes and Treatment of Sterility in Women. E. Reynolds, Boston, Mass.
60 *Influence of Tuberculous Ancestry on Prognosis in Pulmonary Tuberculosis. K. von Ruck, Asheville, N. C.
61 *Pathology of Adenoids and Adenoid Tuberculosis. E. H. White, Montreal.
62 *Congenital Laryngeal Stridor. T. J. Reardon, Boston, Mass.
63 Advisability of Tympanomastoid Exenteration in Suppurative Otitis Media. H. O. Reik, Baltimore.
64 Causes of Failure in Plastic Operations on Female Genitalia. S. M. Brickner, New York.
65 *Chronic External Ophthalmoplegia. W. C. Posey, Philadelphia.
66 Value of Paradoxical Reflex. A. Gordon, Philadelphia.

56. **Surgical Treatment of Goiter.**—Tinker discusses the clinical history of goiter, and emphasizes the importance of early diagnosis and the value of operation in such cases. He says that reports of cases treated by medical measures alone show a death rate higher than those in which operation is done, and this in spite of the fact that usually only the most unfavorable cases have been submitted to excision. Operative measures have cured or relieved a proportionately larger number of patients than any other treatments. In view of these facts, Tinker says that all patients resisting the approved therapeutic measures should be urged to consult a competent surgeon.

57. **Tendon Transplantation in Talipes.**—Ashhurst believes in tendon transplantation in the treatment of selected cases of congenital and acquired talipes. In infantile palsy he insists that as a rule from one to two years should be allowed to elapse between the onset of the paralysis and the resort to tendon transplantation, the paralyzed muscles being treated by means of massage and electricity in the meantime. In congenital clubfoot Ashhurst considers it safer to allow a longer period to elapse before resorting to tendon transplantation. He uses chromicized catgut and makes a mattress suture. He does a periosteal transplantation. Six typical cases are reported.

58. **Gunshot Wounds of Abdomen.**—Vaughan adds three cases to his series of 14 reported previously. In one of the cases there were ten perforations in the small intestine (the ileum), and two in the bladder. Six of the perforations were closed with silk sutures, and two inches of bowel, containing the remaining four sutures, were resected. One opening in the bladder was closed. The other opening was so deep in the pelvis as to be inaccessible, without opening the bladder and suturing it from the inside. Rather than do this, permanent drainage was provided to the bladder, and the patient eventually made a complete recovery. In the second case, nine holes were found in the bowel, distributed through about the last seven feet of the ileum, and two in the bladder. All the holes were closed with silk sutures, the abdominal cavity was thoroughly irrigated with salt solution and closed with drainage. The patient died from peritonitis 26 hours afterward. In the third case the liver, stomach, pancreas and kidney were injured. No irrigation was used, the blood and clots were simply sponged out and the abdomen was closed without drainage. About two months after the operation an abscess formed in connection with the pancreas. This was opened and drained. The discharge continued for five weeks, when it ceased, and the opening healed.

60 **Influence of Tuberculous Ancestry on Prognosis.**—It is shown by von Ruck that the indications point in favor of the view that the mere fact of a tuberculous family history being shown in an individual case will not diminish the patient's chances of recovery.

61. **Adenoids and Adenoid Tuberculosis.**—White examined 75 adenoids histologically and found that primary tuberculosis occurs in about 5 per cent. of all the cases. He says that tuberculosis, therefore, is not an important factor in the production of adenoid hypertrophy, but that in the development of pulmonary tuberculosis adenoids may sometimes be direct channels of infection. Their importance, however, is probably more often indirect by predisposing to catarrhal inflammations of the upper respiratory tract. Adenoids and tonsils are considered important channels of infection in tuberculosis of the cervical glands.

62. **Congenital Laryngeal Stridor.**—Reardon reports one case, which is made the basis of a very full discussion of the clinical history of this affection.

65. **Chronic External Ophthalmoplegia.**—Posey reports one case of this affection, the patient being a girl, 16 years of age. Both eyes were fixed, the right eye looking straight ahead, with the left slightly divergent, and all motion was abolished, except when the patient was requested to look down. Ptosis to a marked degree existed on both sides. The thyroid was normal, and there was no enlargement of the hands and feet. The pupils reacted to light and accommodation stimuli. In the right eye vision equaled 5/9 and in the left eye it equaled 5/7.

University of Pennsylvania Medical Bulletin, Philadelphia.

June.

67 Opsonins and Vaccines as Applied to Surgical Therapy. D. H. Bergey, Philadelphia.
68 *Copper in Human Liver. L. A. Ryan, Philadelphia.
69 *Coagulability of Blood in Disease. M. Solis-Cohen, Philadelphia.
70 *Improved Method of Staining Fibroglia, Myogalia, Myofibrillæ of Striped Muscle, etc. A. F. Coca.

68. **Copper in Liver.**—Ryan says that there can be no question but that copper is a constant constituent of liver tissue, although it is by no means established that it is a normal necessary constituent, but rather what may be termed an accidental constituent, derived from copper-containing foodstuffs. When absorbed into the animal circulation copper forms stable albumin copper salts, especially in the liver, where probably it is stored as a nucleinate of copper; because of the stability of these salts the copper is excreted exceedingly slowly.

69. **Coagulability of Blood in Disease.**—Solis-Cohen made 65 observations with practically negative and unsatisfactory results. Each disease did not seem to have a certain definite clotting time; the average period was about the same in the different diseases. In a given disease, and even in the same patient, the clotting time varied greatly, the variations having no relation to the degree of the patient's temperature, to the character of the food or of the drugs administered, to the time of day the observations were made, or to their relation to meal time. The results obtained by other investigators could not be confirmed.

70. **Improved Method of Staining.**—The steps of the method employed by Coca for staining fibroglia, myoglia, etc., are as follows: 1. Zenker fixation. 2. Paraffin sections at 5 micra or less. 3. Removal of paraffin, etc., to 95 per cent. alcohol. 4. Ninety-five per cent. alcohol containing 1 per cent. iodin, five to ten minutes. 5. Directly into water without previous removal of the iodin. 6. Concentrated aqueous solution of magentarot (Grübler), fifteen minutes. 7. Rinse in water. 8. Three to five minutes in the following: Indigo-carmin (Grübler), 0.75 grm.; saturated aqueous picric acid, 100 c.c.; distilled water, 100 c.c. 9. Differentiate in 95 per cent. alcohol one to two minutes. 10. Absolute alcohol, one minute. 11. Xylol, balsam.

Archives of Pediatrics, New York.

July.

71 *Study of Conditions of Osteomyelitis in Young Children by Roentgen ray. T. M. Rotch and A. W. George, Boston.
72 *Status Lymphaticus and Enlargement of Thymus treated with Roentgen ray. A. Friedlander, Cincinnati.
73 *Pneumococcus Arthritis in Infants and Children. A. F. Furrer, Cleveland.
74 *Eclampsia of Mother as Cause of Early Nephritis in Child. C. G. Grulee, Chicago.
75 *Study of Hospital and Dispensary Milk in Warm Weather. J. H. M. Knox, Jr., and E. H. Schorer, Baltimore.
76 *Suggestions for Reducing Infant Mortality from Summer Diarrhea. C. Herrman, New York.
75 *Study of Hospital and Dispensary Milk in Warm Weather. Croupous Pneumonia. D. J. M. Miller, Philadelphia.

71.—See abstract in THE JOURNAL, July 6, 1907, page 69.

72. **Enlargement of Thymus.**—Friedlander reports one case of status lymphaticus with enlargement of the thymus gland that yielded to treatment with the Roentgen ray after other treatment had failed to produce other results.

73. **Pneumococcus Arthritis.**—Furrer reports a case of pneumococcus arthritis occurring in an infant 16 months old. The right elbow was first affected, and then the left knee. The bacteriologic examination of pus taken from the elbow showed a pure culture of an organism resembling Fraenkel's diplococcus. Animal inoculations were not made. Later the patient developed pneumonia and then symptoms pointing to an abscess in the liver. The infant died, having lived six months after the original joint infection. A necropsy was not made. Furrer also tabulates 26 previously reported cases of pneumococcus arthritis occurring in infants and children.

74. **Eclampsia of Mother and Nephritis in Child.**—Grulee reports a case, a study of which leads him to believe that it is justifiable to regard eclampsia in the mother as one of the causes of the so-called idiopathic nephritis, encountered in children.

75. **Hospital and Dispensary Work.**—The study of milk carried on by Knox and Schorer emphasizes the importance of pasteurizing all milk designed for infant feeding during the summer months. The authors urge that pasteurization should be done as soon as possible after the milk is produced.

76. **Reducing Infant Mortality from Summer Diarrhea.**—Herrman urges instructing the mothers of the very poor in the duties of the expectant mother, and in the feeding of infants.

Northwest Medicine, Seattle.

July.

78 Leprosy as Seen by the Hawaiian Practitioner. P. R. Waughop, Seattle, Wash.
79 Clinical Course and Treatment of Pleurisy. J. Sutherland, Spokane, Wash.
80 Opsonic Index in Tuberculosis. W. R. M. Kellogg, Seattle.
81 *Case of Congenital Exomphalic Hernia. C. N. Suttner, Walla Walla, Wash.

81. **Congenital Exomphalic Hernia.**—In the case reported by Suttner the intestine, stomach and liver were outside of the body, simply covered by peritoneum and the attenuated splanchnopleure. The deficiency in the abdominal wall extended from one-half inch of the ensiform cartilage to within one inch of the symphysis pubis. The structures were replaced in the abdomen, the liver being retained in place with two sutures, and the opening was closed with 28 sutures. The wound healed by first intention, and the child was well at the time of writing.

California State Journal of Medicine, San Francisco.

July.

83 *Ischemic Paralysis and Contracture Treated by Bone Shortening. T. W. Huntington, San Francisco.
84 Amplitude of Accommodation at Different Periods of Life and Its Relation to Eyestrain. E. Jackson, Denver, Colo.
85 *Aneurism of the Left Ventricle. W. C. Voorsanger, San Francisco.
86 Dermoids of Scalp. R. Brown, Santa Barbara.
87 Gonorrheal Conjunctivitis. M. E. Hart, New York.
88 Differential Diagnosis of Organic from Functional Dyspepsia. D. Fulton, Los Angeles.
89 Effect of Chemicals on the Heart Nerves. W. E. Garrey, San Francisco.
90 Throat Infections of Childhood. S. T. Pope, Watsonville, Cal.

83. **Ischemic Paralysis and Contracture.**—In a case of this kind Huntington resected one and one-eighth inches of the ulna and radius at about the upper part of the lower two-thirds. The bones were wired together. The wounds healed well and bony union was complete at about the end of two months. At present, the range of motion in the hands and fingers is fully if not more than one-half normal.

85. **Aneurism of Left Ventricle.**—In Voorsanger's case there was a cavity with a fibrous rim, just under the chordæ tendinæ, about 8 c.c. from the apex. This cavity contained a large clot. The valves were all normal, except the mitral, which contained a few thickenings. The pathologic diagnosis in the case was hydrothorax pericarditis, mitral insufficiency, hypertrophy of left ventricle, dilatation of right ventricle, aneurism of the left ventricle in the upper third near the auricle.

Montreal Medical Journal.

July.

91 *Excision of Cecum for Carcinoma. O. M. Jones, Victoria, B. C.
92 Life and Works of Sir Almroth Edward Wright, with Reference to Opsonic Treatment. G. E. J. Lannin.
93 *A Prolonged Fast. A. A. Martin, Montreal.
94 Traumatic Asphyxia. C. K. P. Henry, Montreal.

91. **Excision of Cecum for Carcinoma.**—Jones reports five cases and points out particularly the difficulty of making an early diagnosis. He excises the cecum and unites the colon to the ileum. One man is alive and well, six years after the operation. Two of the patients died, one twelve months after the operation and the other one month after operation.

93. **Prolonged Fast.**—Martin describes his experiences during a nine days' fast, when he partook of no nourishment whatever, though he drank freely of what water he desired, about three ordinary tumblerfuls a day. Various tests were made by fellow physicians, and the result is carefully recorded.

New Orleans Medical and Surgical Journal.

August.

95 Ergot and Quinin as Oxytocics. L. M. Griffin, Oakley, La.
96 Rosacea of the Chin and Nose. J. V. Shoemaker, Philadelphia.
97 Epilepsy from Hydrocephalus after Complete Ossification of Cranial Bones. E. M. Robinson, Birmingham, Ala.
98 Treatment of Chronic Heart Disease. J. B. Elliott, Jr., New Orleans, La.
99 Diagnosis of Cardiac Diseases. T. Ragan and S. L. White, Ruston, La.
100 *Atropin in Acute Intestinal Disturbances. C. W. Allen.
101 Etiologic Factors in Insanity. E. M. Hummel, Jackson, La.
102 Some Things the General Practitioner Can and Should Do with the Stomach Tube. J. T. Halsey.
103 *Detection and Significance of Occult Blood in Feces and Stomach Contents. J. A. Storck, New Orleans.

100. **Atropin in Acute Intestinal Disturbances.**—In three cases of polyp and one of acute intestinal indigestion, Allen employed successfully 1/50 grain of atropin. In one case three doses were given, with an hour interval between each. Another patient received about ⅛ of a grain during five or six hours.

103. **Occult Blood.**—Storck emphasizes the importance of detecting occult blood in the stomach contents and in the feces, and commends Adler's benzidin test, which is conducted as follows: The sample of feces or stomach contents is stirred with water to a thick paste. About 4 or 5 c.c. are then placed in a test-tube, and 1 c.c. of glacial acetic acid is added. After shaking the tube, 2 c.c. of a freshly prepared concentrated solution of pure benzidin in 90 per cent. alcohol, heated, are added, with an equal amount of hydrogen dioxid. If there are even minimal traces of blood, the color turns, almost at once, a deep green, which passes into a bluish green if there is much blood. In the presence of very large quantities of blood, the color is almost black. The tint gradually fades into a dirty brown. This test is more easily applied than either the aloin or guaiac test, and is much more sensitive, being in the ratio of 1 to 200, or against 1 to 10,000 in the guaiac and aloin tests.

Journal of the Arkansas Medical Society, Little Rock.

June.

104 *President's Address, Ark. Med. Soc. C. T. Drennen, Hot Springs, Ark.
105 Value of Organization in Medicine. J. A. Wyeth, New York.
106 *The Medicine of the Physician. C. S. N. Hallberg, Chicago.

104.—See abstract in THE JOURNAL, June 22, 1907, page 2145.

106.—See abstract in THE JOURNAL, June 22, 1907, page 2146.

Journal of Kansas Medical Society, Columbus.

June.

107 President's Address, Kansas Medical Society. L. L. Uhls, Osawatomie, Kan.
108 Value of Blood Examination in Children. M. T. Sudler, Lawrence.
109 Nystagmus. J. S. Wever, Kansas City, Mo.

The Medical Fortnightly, St. Louis.

June 25.

110 A Definition of Life. W. W. Crane, Sinclair, Ill.
111 Dermatologic Axioms. N. E. Aronstam, Detroit.
112 Opsonic Treatment of Bacterial Diseases. O. H. Brown, St. Louis.

Colorado Medicine, Denver.

June.

113 The Doctor and the Public. E. Stuver, Fort Collins, Colo.
114 The Physician in Politics. C. F. Andrew, Longmont, Colo.
115 Congenital Hypertrophic Stenosis of the Pylorus. C. B. Lyman, Denver.
116 Gastroenterostomy. I. B. Perkins, Denver, Colo.

Southern California Practitioner, Los Angeles.

June.

117 Syphilis of the Mouth. G. MacGowan, Los Angeles, Cal.
118 Primary Angina Ludovici. H. A. Kiefer and R. Hagan, Los Angeles.
119 Prevention of Tuberculosis, Venereal Diseases and Alcoholism. G. H. Kress, Los Angeles.
120 Plastic Surgery of the Mouth. C. D. Lockwood, Pasadena, Cal.
121 Prevention of Insanity. F. E. Corey, Alhambra, Cal.
122 The More Important Cerebral Lesions. W. H. Dudley, Los Angeles.

American Medicine, Philadelphia.

June.

123 Therapeutics of Bright's Disease Based on Its Etiology. W. H. Porter, New York.
124 Metabolic Aspects of Overfeeding and Underfeeding. R. W. Webster, Chicago.
125 Necessity for Routine Examination of Ear Drums of Children with Fever. W. B. Hoag, New York.
126 Modern Development of Physical Methods of Healing. A. N. Baer, Milwaukee, Wis.
127 Diagnosis in Intussusception. M. M. Hull, Atlanta, Ga.
128 Bacteriologic Studies of Smegma. R. C. Rosenberger, Philadelphia.
129 Drainage in Treatment of Acute Appendicitis. J. G. Sheldon, Kansas City, Mo.
130 Abnormal Lactation. J. Knott, Dublin, Ireland.
131 Serum Therapy in Exophthalmic Goiter. A. Heineberg, Philadelphia.

The Columbus Medical Journal.

June.

132 Injuries and Foreign Bodies of the Ear, Nose and Throat. T. V. Fitzpatrick, Cincinnati.
133 Training Schools for Nurses in Hospitals for the Insane. I. A. Bradley, Columbus, O.
134 Teaching of Biologic Subjects in the Colleges of Liberal Arts and Science in Ohio. S. R. Williams, Oxford, O.
135 What Should be the Requirements to Gain One Year's Advanced Standing in the Medical Colleges of Ohio. J. U. Barnhill, Columbus, O.
136 Place of Materia Medica in the Curriculum. J. G. Spenzer, Delaware, O.
137 Teaching of Chemistry in Colleges of Liberal Arts and Science in Ohio. J. G. Spenzer, Delaware, O.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

July 20.

1 *Vibrating Sensations in Diseases of the Nervous System. R. T. Williamson.
2 Spa Treatment of Neurasthenia. E. J. Cave.
3 Laryngismus Stridulus in New-born Infants. E. Smith.
4 *Value of Rhythymical Exercises in Treatment of Spasmodic Neuroses. T. S. Wilson.
5 *Educational Aspect of the Cancer Question. C. P. Childe.
6 *Possible Clue to Solution of the Cancer Problem. C. G. Mackay.
7 *Inflammatory Changes in Posterior Spinal Root Ganglia in Cases of Cutaneous Cancer. G. L. Cheatle.
8 *Case of Streptococcic Conjunctivitis. H. H. B. Cunningham.
9 Bodies Found in Ticks. F. C. Wellman.
10 Iodin and Typhoid. G. V. Perez.
11 Simultaneous Dislocation of Both Shoulders. M. J. Lyden.
12 A Fifteen Pint Hydrocele. A. E. Horn.

1. **Vibrating Sensation in Diseases of Nervous System.**—In the investigations he has made, both on the well and the sick, Williamson made use of a tuning fork nine inches long and its prongs five and a half inches long. He has found this as useful, practically, as the more delicate and more powerful instrument. He claims that the vibrating sensation is a delicate test for detecting slight impairment of sensation, although the vibrating sensation may be lost, when other forms of sensation are felt, or are only very slightly impaired. This is sometimes the case in early tabes, in slight peripheral neuritis, and often in diabetes mellitus. In diseases strictly limited to the motor structures, the vibrating sensation is not lost, even at an advanced period of the disease. In any case in which the disease appears to be one causing lesion only of the motor parts of the nervous system, if it should be found that the vibrating sensation is lost, this fact indicates that the disease is affecting also sensory structures; and thus it may be of diagnostic value. In cases of paraplegia from spinal caries, and occasionally in spinal syphilis, the loss of the vibrating feeling may be the only objective symptom of affection or sensation, at an early stage of the disease. In hemianesthesia, if the vibrating feeling is lost when the foot of the tuning fork is placed on the edge of the sternum on the side of the tactile anesthesia, but felt on the other side, the case is one of hysterical or functional hemianesthesia, or of malingering; while in hemianesthesia due to organic disease the vibrating sensation is felt when the foot of the vibrating tuning fork is placed on the edge of the sternum on the side of the tactile anesthesia.

4. **Rhythmical Exercises in Spasmodic Neuroses.**—Wilson endorses highly the value of rhythmical exercises in the treatment of spasmodic neuroses. He says that each case must be treated individually, and exercises must be given which are best calculated to break up the morbid combinations, and to induce the habit of new associated movements. It is important, he says, that day by day for days or weeks the muscular mechanism be kept so constantly tired by various rhythmical exercises that there is no energy left for the irregular spasmodic jerkings.

5. **The Cancer Question.**—Childe claims that there are abundant reasons now for an endeavor to bring the lay knowledge of cancer in the line with present surgical views, and to convince the public that a considerable share in the possibility of cure rests with them, and that it varies impersonally with the delay in seeking advice.

6. **Possible Solution of Cancer Problem.**—Mackay reports the case of a woman, who had a typical cirrhous cancer of the breast. The tumor was removed, recurred and was then subjected to irradiation, from the Roentgen ray. The patient's condition became very serious and a severe attack of pleurisy with effusion made matters worse. Suddenly the patient began to feel much better, and the local conditions were entirely altered. Even the recurrences of the tumor decreased in size and changed their appearance, and eventually disappeared almost entirely. Mackay suggests that it was the serum that was responsible for this change, showing that a growing cancer produces in the serum a force which is antagonistic to the development of the cancer. He thinks that his patient would certainly have died but for the pleural fluid, by which she was inoculated, and that the inoculation saved her life. He asks whether that inoculation could not have been done artificially, and thinks it not too visionary to entertain the hope than a method founded on imitating what appears to have taken place in this case may eventually be possible.

7. **Changes in Spinal Root Ganglia in Cutaneous Cancer.**—Cheatle refers briefly to a belief expressed some time ago that the spread of cancer in the skin is associated with degenerative changes in the posterior spinal root ganglia, which supplies the area invaded. He reports two cases, in which cancer had begun on the cutaneous distribution of one ganglion and spread into the cutaneous distribution of its neighbors; yet it was only in the ganglion on the distribution of which the cancer had begun that inflammatory changes could be seen. The other ganglia into whose cutaneous distributions the cancer had spread, showed changes of degeneration.

8. **Streptococcic Conjunctivitis.**—Cunningham reports a case of this kind, which in its early appearances did not differ materially from the ordinary acute catarrhal conjunctivitis. Examination of the discharge showed streptococci almost in pure culture. The eye was lost, in spite of all efforts made to save it.

The Lancet, London.

July 20.

13 General Surgical Anesthesia. F. W. Hewitt.
14 Plague. W. J. R. Simpson.
15 Common Sporadic Seven-day Fever of Indian Ports Simulating Dengue. L. Rogers.
16 *Experiments on Prolonged Protein Feeding. D. Forsyth.
17 Male Triplets with Eclampsia in Patient Aged Sixteen. R. Ollerenshaw.
18 *Effect of Tuberculin on General Tuberculo-opsonic Index in Tuberculous Patients. H. H. Clarke and H. G. Sutherland.
19 Multiple Hereditary Developmental Angiomata of the Skin and Mucous Membranes, Associated with Recurring Hemorrhages. F. P. Weber.
20 Case of Partial Perforation of Bowel, Simulating Appendicitis. W. P. Blumer.
21 Injury to Shoulder, Herpes Zoster, Influenza. J. Allan.
22 Case of Supernumerary Digits. W. H. W. Attlee.

16. **Experiments of Protein Feeding.**—Forsyth summarizes the results of his experiments as follows: 1. Fowls kept for long periods on protein diet but otherwise under healthy conditions show no hypertrophy or microscopic changes in the thyroid glands. 2. Their bony tissues are not affected provided the deficiency of calcium and other bases in the meat diet is made up by a supply of lime. 3. In none of the birds was any change indicative of gout observed. 4. Each of the four fowls maintained under the above conditions showed an unusual amount of colloid in their pituitary glands. 5. The thyroid glands of carniverous birds of prey are not obviously larger, proportionately, than those of other classes of birds, nor are there any peculiarities of microscopic structure in the glands of carnivorous and graminivorous birds referable to differences in their natural foods.

18. **Effect of Tuberculin on Opsonic Index.**—Clarke and Sutherland found that following the injection of tuberculin a rapid rise of the opsonic index occurred within two hours. It rose to a maximum in four hours, fell to its original level in six hours, and was succeeded by the usual negative and positive phases.

Journal of Obstetrics and Gynecology of the British Empire, London.

July.

23 *Pelvic Inflammation in the Female. T. Wilson.
24 *Epilepsy and Status Epilepticus in Connection with Pregnancy and Labor. R. Jardine.
25 *Relation of Frequency of Fetal Heart Beat to Sex and Weight of Child. J. C. H. Leicester.
26 Hysterectomy in Case of Fibroid Tumor of Uterus Firmly Bound Down by Adhesions. J. N. Stark.

27 Bilateral Primary Tuberculous Salpingitis with Secondary Infection of the Perivascular Lymphatics of the Uterine Wall. C. Lockyer.
28 Relation of Alterations in the Ammonia Coefficient to the Toxemia of Pregnancy. C. N. Longridge.

23. **Pelvic Inflammation.**—Wilson discusses the clinical history of 1,092 cases of pelvic inflammation in the female.

24. **Epilepsy in Pregnancy.**—The first case reported by Jardine was one of epilepsy in which the attacks, which were very numerous and occurred at short intervals, began toward the end of the pregnancy. There was no albumin in the urine, so that Jardine absolutely ruled out the possibility of the case being one of eclampsia. The patient died, and the infant died on the third day. The second patient had no attacks until she became pregnant. The greatest number of fits occurred on the day after delivery. In the third case the patient had convulsions when 12 years old, and then not again until she was in the sixth month of pregnancy. They recurred during the second and third pregnancy. The fourth patient began to have convulsions shortly after she was 10 months old. Since her marriage the attacks were not convulsive, but consisted of loss of consciousness. During pregnancy the attacks increased in frequency, and more so during the period of lactation.

25. **Frequency of Fetal Heart Beat.**—Leicester concludes his paper as follows: 1, Sex has practically no effect on the frequency of the fetal heart beat; 2, it is impossible in any given case to form even a rough judgment as to sex from the rate of the fetal heart beats; 3, weight does seem to exercise, as a general rule, a distinct influence, since the slower the rhythm of the fetal heart the bigger the child is likely to be.

Indian Medical Gazette, Calcutta.

June.

29 *Application of Vaccino-therapy to Dysentery. W. H. C. Forster.
30 Small Incinerators. H. A. Haines.
31 Report of the Medical College Hospital, Calcutta. C. P. Lukis.
32 Rat-poisoning and Its Effects in Azamgarh City. J. N. Walker.
33 Operation for Entropion. R. Heard.
34 Melanotic Sarcoma and Sarcomatous Melanoma. O. St. J. Moses.
35 Two Surgical Cases. M. H. Thornely.

29. **Vaccino-Therapy in Dysentery.**—Forster has given the subject of treating bacillary dysentery by vaccino-therapy considerable attention and study. He finds that a vaccine can be prepared from the Shiga bacillus, which in therapeutic dose gives rise to no greater discomfort than a little local tenderness. The vaccine he used consisted of an emulsion of the dead bacilli in normal salt solution, to which 0.5 per cent. of carbolic acid had been added. The vaccine is injected subcutaneously in line with the outer border of the rectus muscle, half an inch above the umbilicus.

Dublin Journal of Medical Science.

July.

36 Why Are the Great Motor and Sensory Tracts of the Central Nervous System Crossed? A. F. Dixon.
37 Splenic Enlargement and Its Influence on the Blood. T. L. De Courcy.

Journal of Tropical Medicine and Hygiene, London.

July 1.

38 Plague. W. J. Simpson.
39 Case of Mycetoma in Cyprus. R. A. Cleveland.

Presse Médicale, Paris.

40 (XV, Nos. 39-40, pp. 313-328.) The End of the Myogenic Theory of the Heart Action. (Fin de la théorie myogène.) E. de Cyon.
41 Duration of Bed Rest after Physiologic Childbirth. (Durée du séjour au lit.) L. Bouchacourt.
42 Prophylactic Measures when Soldiers are Given Leave of Absence or Discharged for Pulmonary Affections. (Hygiène sociale.) L. Landouzy.
43 *Serious Anemia in the Course of Acute Infectious Diseases. (Anémies graves, etc.) L. R. Dumas and Poisot.

43. **Serious Anemia in the Course of Acute Infectious Diseases.**—In the first of the three cases described a child of 11, with miliary tuberculosis, developed pernicious anemia of the plastic type. In the second case a child of 20 months presented symptoms of a severe acute bronchopneumonia, but the *Staphylococcus aureus* was found in all its organs and there was proliferation of the bone marrow, of the myeloid type, with corresponding changes in the composition of the blood. The diagnosis had been acute bronchopneumonia at first, but was corrected to otitis with septicemia and pernicious anemia. The child had been previously healthy, except for a transient diarrhea two months before the sudden onset of the fatal illness.

Revue de Chirurgie, Paris.

44 (XXVII, No. 4, pp. 529-712.) *Congenital Angioma of the Face. (Angiome caverneux de la face.) D. J. Cranwell.
45 *Spontaneous Hernias of the Semilunar Fold. (Hernies du repli semi-lunaire de Spiegel.) L. Thévenot and Gabourd.
46 *Luxation of Semilunar Fibrocartilages of Knee. (Luxations des cart. semilun. du genou.) (Commenced in No. 3.) C. Dambrin.

44. **Angioma of the Face.**—In the case described by Cranwell the patient was a young man and the tumor in the left cheek had been noted since infancy and had gradually increased in size until it was as large as a child's head. It had pushed inward the jaws and teeth and pushed up the bones of the cheek. It was a comparatively solid growth, the skin above was normal, and the tumor was removed without much difficulty after ligation of a number of blood vessels. Notwithstanding the adherence of the tumor and the almost inevitable hemorrhage, the final outcome of operative treatment has been excellent in all such cases. If not removed, the progressive growth of the tumor dooms the patient. In the case described a number of angioliths the size of a pea could be palpated through the skin, and others were found in the tumor.

45. **Hernia of the Semilunar Fold.**—Thévenot and Gabourd report two cases of hernia in the space between the outer margin of the rectus and the insertion of the muscular fibers of the transversalis, near McBurney's point. They review the similar cases in the literature and discuss the diagnosis and treatment. The hernia occurs on a line joining the umbilicus and anterior superior iliac spine; after passing between the aponeuroses of the transversalis and internal oblique the hernia comes in contact with the aponeurosis of the external oblique, which may hold it back or be pushed out by it. When the hernia is small, the symptoms may be vague and be ascribed to dyspepsia, enterocolitis, etc. If on the left side, sigmoiditis is surmised; if on the right, chronic appendicitis. If a tumor is palpated it is differentiated as a hernia by the usual signs, but in case these are lacking the diagnosis may be difficult. The prognosis is better in men than in women. Obesity renders control of the hernia more difficult and inflammation may ensue. Radical treatment is indicated for the young, and may be necessary for older and obese patients, but recurrence is liable, as with umbilical hernia. In case of obesity and weak heart a truss is preferable to herniotomy.

46. **Recurring Dislocation of Semilunar Cartilage of Knee.**—Dambrin's article gives comparative summaries of eighty-seven cases of luxation of the semilunar cartilage in which it was removed, and of thirty-four others in which it was merely reduced and fastened in place. His conclusions favor partial removal of the cartilage, as this is a simple, easy and effectual intervention. The only conditions in which he would advocate meniscopexy are those arising when the cartilage is partially torn in front or at the side, or when its attachments are merely stretched without being actually torn. In these circumstances, careful fixation will retain the meniscus in its normal position. The literature cited shows the remarkable results obtained by appropriate arthrotomy in treatment of recurring luxation. Research on the cadaver shows that a vertical incision, about 6 cm. long, is preferable, exactly between the anterior and the lateral ligaments, carefully avoiding injury of the latter. In seventy-four cases of partial extirpation of the dislocated semilunar fibrocartilage the results were perfect. Lockwood's patient was able to dance and mount a horse within a few months, and Owen's patient won the championship at football a few months afterward. Recurrence was never observed, and ankylosis developed in only one case. The minor points of the technic are reviewed in detail.

Archiv f. klinische Chirurgie, Berlin.

47 (LXXXII, No. 3, pp. 615-954.) Detachment and Suture of Nerves. (Nervennaht und -Losung.) F. v. Auffenberg.
48 Experimental Research on Steam Sterilization of Dressings. (Dampfdesinfection der Verbandsstoffe.) Gerdes.
49 Two Thousand Operations for Appendicitis. (Zur Appendicitis-Frage.) A. V. and E. Moschcowitz (New York).
50 Operations for Appendicitis at Marburg. (Epityphlitis-Fälle, 1893-1906.) R. Henking.
51 Sacral Operations on Rectum and Uterus. (Sacrale Op. am Mastdarm und Uterus.) F. Goldschwend.

52 Clinical Manifestations with Gastrointestinal Pseudoleukemia. (Gastroint. Pseudoleukämie.) M. Hoffmann.
53 Retroperitoneal Tumors in Pelvis. (Retroperit. Beckentumoren.) Neupert.
54 Asepsis in Surgery of Ears and Nose. (Aseptik in der Ohren- und Nasenchirurgie.) G. Heermann.
55 N. I. Pirogoff. W. I. Rasumowsky.
56 Experimental Study of Gastroenterostomy, Enteroanastomosis and Resection of Bowel. (Gastroenterostomie, Darmresection, etc.) Pochhammer.
57 Teratoma of Upper Jaw. (Teratoma des Oberkiefers.) V. v. Bergmann.
58 Double Empyema. (Doppelseitige Empyem.) D. Hellin.
59 Bone Cysts and Fibrous Osteitis. (Knochencysten und Ostitis fibrosa v. Recklinghausen.) H. v. Haberer.
60 Fracture of the Center for the Epiphysis of the Calcaneum and Similar Injuries of the Bones in Youth. (Fractur des Epiphysenkerns des Calcaneus). P. Haglund.
61 Idiopathic Retropharyngeal Abscess. (Idiopath. Retropharr.-Abscess.) F. Kempf.
62 Who First Recommended Burnt Sponge for Goiter? (Spongia usta gegen Kropf.) P. Richter.
63 Technic of Amputation of Breast. (Amputatio mammæ.) K. Vogel.

Correspondenz-Blatt f. Schweizer Aerzte, Basle.

64 (XXXVI, Nos. 1-5, pp. 1-168.) *Vertigo as a Symptom. (Der Schwindel als Krankheitssymptom.) Huguenin.
65 Epidemic of Cerebrospinal Meningitis in Switzerland in 1901. (Epidemie, etc., in Kanton Thurgau.) Walder.
66 Transient Stenosis of Superior Vena Cava with Tuberculous Affection of Right Lung. (Temporäre Stenose der vena cava superior.) W. Spirig.
67 Leukemia. (Zur Kasuistik der Leukämie.) A. Studer.
68 Treatment of Appendicitis. (Perityphlitis.) E. Hagenbach.

64. Vertigo as a Symptom.—Huguenin describes the mechanism of vertigo as it is observed in various affections and its differential value, especially in cases of paralysis of the ocular muscles. It seems to be a prerogative of paralysis involving the oblique muscles. Total unilateral oculomotor paralysis may be accompanied by vertigo so intense that the patient staggers as he walks, with a tendency to nausea and vomiting. With horizontal vision there is little or no vertigo, as the objects are seen in normal position. With upward vision one of the figures reflected on the retina slants, but it generally falls outside the field of vision. With downward vision objects are reflected slanting, and the individual feels as if everything around him were falling to one side and the floor moving up or down. Diagrams are given to illustrate the different mechanisms involved.

Dermatologische Zeitschrift, Berlin.

Last indexed, XLVIII, page 180.

69 (XIII, No. 10, pp. 688-748.) Urticaria with Depressions. (Urt. depressa.) H. Vörner.
70 *Roentgen Treatment of Leprosy at Memel Leprosorium. (Behandlung Leprakranker mit R.-Strahlen.) O. Lassar and others.
71 (No. 11, pp. 749-826.) Idiopathic Atrophy and Hardening of the Skin. (Id. Hautatrophie und Sklerodermie.) P. Rusch.
72 *Results of Treatment of Cutaneous Affections with Ultraviolet Rays. (Uviolichtbehandlung bei Hautkrankheiten.) A. Strauss.
73 Lupus with Venous Congestion. (Lupus pernio.) R. Polland.
74 (No. 12, pp. 827-912.) *Origin of Mercurial Colitis and Stomatitis. (Pathogenese der merkur. Col. und Stomatitis.) J. Almqvist.
75 (XIV, No. 1, pp. 1-66.) *Present Status of Treatment of Lupus and its Indications. (Lupus vulgaris.) A. Blaschke.
76 *Prevention of Epididymitis in Treatment of Gonorrhea in Acute and Subacute Stages. (Verhütung der Epid.) J. Neuberger.

70. Roentgen Treatment of Leprosy.—Nine lepers were given systematic Roentgen treatment, but the results were not encouraging except in the early phases of the disease, when the lesions were few and isolated. The benefit obtained in cases of this kind, it was stated, justifies continuance of the treatment. Two or three exposures a week were made, each from 10 to 15 minutes in duration, and with the tube about 10 cm. from the skin. Inflammation and gangrene followed the exposures in some of the advanced cases. The local reaction to the exposures was similar to that observed with chemical applications.

72. **Ultraviolet Rays in Treatment of Cutaneous Affections.**—Strauss has treated 350 patients with various skin affections by exposure to the ultraviolet rays. He gives summaries of 42 of the cases, with a number of illustrations. He found that preliminary application of a medicated salve enhanced the action of the rays—carbolic acid in alopecia, corrosive sublimate in lupus, solution of hydrogen dioxid in infected wounds. The drugs seemed to be absorbed better under the influence of the hyperemia.

74. Pathogenesis of Mercurial Colitis and Stomatitis.—Almqvist relates extensive research which has demonstrated that three factors predominate in the causation of mercurial inflammation of the colon and mouth: The action of the chemical; the action of hydrogen disulphid on a mucous membrane; and the injury of the membrane. By combining these factors he was able to induce in animals lesions identical in every respect with those of mercurial colitis and stomatitis in men. Putrefactive processes in the mouth and large intestine generate the hydrogen disulphid, which causes erosions or loosening of the mucosa. The gas is absorbed through the erosions it causes, and, if the blood contains mercury, a deposit of mercurial sulphate occurs in the outer loops of the capillaries. The endothelium of the vessels becomes coated with the mercury sulphate, and the physiologic functions are interfered with. The nutrition of the part suffers; the vessels become partly paralyzed, and dilatation follows, with degenerative processes in consequence of the nutritional disturbance. Experiments with other metals did not cause the precipitation of the sulphate from the absorbed hydrogen sulphid possibly because they are not dissolved by the blood in the same way as mercury. In any event, they evidently do not combine in the same way with the sulphuretted hydrogen gas.

75. **Modern Treatment of Lupus.**—Blaschko summarizes his communication in the statement that lupus has lost its old reputation as a frightful affection. It is not considered any worse now than many other skin diseases, and often proves easier to treat than certain obstinate forms of psoriasis and eczema. He thinks that the greatest triumph of modern methods of treatment is that the affection now is arrested in its earlier phases. Before many years, he adds, there will no longer be any cases that will require Finsen or hot-air treatment. Patients now apply to a physician early, and the affection is nipped in the bud, which is one of the greatest triumphs of modern dermatology.

76. **Prevention of Epididymitis.**—Neuberger states that epididymitis developed in only 6 out of 200 patients whom he treated for gonorrhea on the principle of injection of small amounts of a weak disinfectant, left in contact for only three or four minutes, repeating the injection three or four times a day. He warns the patient that the fluid must be injected very gently, not forcing it into the posterior urethra, but injecting it very cautiously and slowly, as the patient stands with the penile portion of the urethra pendent, carefully refraining from distending the urethra. If the gonorrhea runs a mild course, it heals in from two to four or six weeks under this gentle treatment with a weak disinfectant. In case of much inflammation and edema, he applies antiphlogistic measures at first, and then injects only 3 c.c. of the disinfecting fluid. After the acute and subacute stages are past, irrigation according to Janet will then quickly change the picture and complete cure soon follows, as a rule.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

77 (XXXIII, No. 23, pp. 913-952.) *Pathogenesis and Specific Destruction of Cancers. (Pathogenese und spez. Abbau der Krebsgeschwülste.) E. v. Leyden and P. Bergell.
78 Peculiar Double Granules in Trachoma Cells. (Doppelkörnchen-Parasiten?—in Trachomzellen.) R. Greeff.
79 The Antityphoid Protecting Substance Obtained by the Brieger Technic. (Nach der Briegerschen Schüttelmethode hergestellte Typhusschutzstoffe.) R. Bassenge.
80 Proposal for Conventional Standard for Estimating Degree of Knee Jerk. (Fixierung des Intensitätsgrade des Knie-Phänomens.) A. Pick.
81 *Methods and Importance of Measurement of Pulse Pressure. (Pulsdruckmessung.) F. Klemperer.
82 Treatment of Descending Diphtheria uninfluenced by Antitoxin. (Ueber heterochthone Serumunwirksamkeit und ihre postoperative Behandlung bei deszendierender Diphtherie.) (Commenced in No. 22.) H. Klose.
83 Electrode for the Ear. (Neue Ohrelektrode.) K. Herschel.
84 Army Medical Corps in the Netherlands. (Militärsanitätswesen.) van de Moer.

77. **Specific Action of Liver Ferment on Cancer.**—In a previous communication, summarized in these columns, von Leyden called attention to the fact that every local injection or application to a cancer is followed by a reaction which takes the form of increased proliferation of the growth. Injections of pancreatin and of radioactive substances are the only known exceptions to this rule; there is no increased growth after their application. Experiments with other organ extracts since have demonstrated that liver extract, containing a fer-

ment which splits that part of the simplest peptone which pancreas extract does not affect, displays a similar lack of growth-stimulating effect when injected into a cancer. More than this, it has an actual destructive action, the cancer tissue breaking down under the influence of the enzyme contained in the liver extract, with necrosis and dissolving of the tissues. This occurred strikingly, he asserts, in the case of a large sarcoma of the neck, in a recurrent mammary cancer and in an extensive uterine cancer originating in the vagina.

The effect is so rapid and extensive and toxic substances are generated in such amounts that, for the present, the method can not be applied in therapeutics. Cancer tissue in the test-tube is not destroyed and dissolved in the same way as in the living subject. In this point the liver extract differs from pancreas extract, but its action on the living cancer is incomparably more energetic and selective than that of pancreas extract on the living tumor. The facts observed seem to indicate that the constant, unrestricted growth of the cancer—in which lies its special malignant feature—is due to the lack or inadequate supply of a probably specific, ferment-hydrolytic force present in the normal organism. The total or partial lack of this substance explains the unchecked growth of the cancer. As the cancer grows, its avidity uses up this substance still more rapidly. The liver extract used in the experiments was obtained fresh by pressure from the ground liver of animals.

81. **Study of Blood Pressure.**—Klemperer expatiates on the importance of the study of the blood pressure and describes extensive experience with the various technics. He has been especially pleased with von Recklinghausen's apparatus for determining the pulse amplitude, that is, the difference between the extremes of the diastolic and systolic pressures. Five months of daily tests of the blood pressure in healthy persons and in patients have shown that the normal standard of amplitude is about 60 cm. water. The amplitude is exceptionally large in arteriosclerosis and small in heart disease, etc. It is not decisive in regard to the reciprocal relations between the heart energy and the peripheral resistance, but it affords better insight than mere determination of the blood pressure alone, and is particularly instructive when sphygmography and sphygmomanometry are combined.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

85 (LXXXVI, Nos. 5-6, pp. 391-586.) *Experiences with Rectoscopy. (Rektoskopie.) G. Sultan.
86 *Congenital (not operative) Gaps and Slits in the Mesentery and their Importance as Causes of Intestinal Occlusion. (Lücken und Spalten des Mesenterium.) W. Prutz.
87 Clinical, Pathologic, Anatomic and Radiologic Study of 10 Cases of Multiple, Cartilaginous Exostosis. (Exostosis cart. mult.) F. Pels-Leusden.
88 Thickening of Tubercle of Tibia in Adolescence. (Verdickung der Tub tibiæ.) H. Jacobsthal.
89 Mechanical Ileus in Acute Inflammatory Abdominal Affections. (Mech. Ileus.) M. Martens.
90 Chronic Deforming Tendovaginitis and Luxation of Peroneus Tendon. (Tendovag. chron. def. und Luxation der Peroneal-sehnen.) O. Hildebrand.
91 New Formation of Lymph Glands with Carcinoma and Sarcoma. (Neubildung von Lymphdrüsen.) C. Ritter.
92 *Curative Results of Fractures of Leg treated by Bardenheuer's Method of Extension. (Unterschenkelbrüche und die Extensionsmethode.) Schrecker.
93 Laceration of Renal Pelvis and Ureter with subsequent Paranephritic Cyst. Operation. Recovery. (Nierenbecken und Ureterzerreissung.) A. Hildebrandt.

85. **Rectoscopy.**—Sultan describes a few cases to illustrate the importance of rectoscopy as a diagnostic measure in certain cases of lesions in the sigmoid flexure or upper rectum, or cases in which the intestinal lesion can be inspected through an artificial anus. The rectoscope should always be used in the knee-chest or knee-shoulder position, as this favors introduction of air—this pneumatic principle being a great advantage for the inspection. He warns, however, that the procedure is by no means free from danger when the walls of the intestine are inflamed or weak from any cause, and advises refraining from the use of the rectoscope in case of much debilitated, anemic patients with relaxed tissues. In one case which he relates in detail the rectoscope was introduced readily for 20 cm., but insufflation of air ruptured the wall of the rectum or sigmoid flexure and the patient, a woman of 53, with chronic catarrh of the large intestine, succumbed seven weeks later. Spastic contraction of the intestinal wall simulated a tumor, but the weakened wall was unable to resist the pressure of the insufflated air.

86. **Gaps or Slits in Mesentery as Cause of Intestinal Occlusion.**—Prutz reviews the literature on this subject, giving summaries of 18 cases in which operative relief was attempted and 24 without, with 9 other cases of defects in the mesentery which had not caused any trouble. He discusses the causes, symptoms and indications in the various conditions. In some of the cases on record internal incarceration must have occurred previously and spontaneously subsided, as transient threatening attacks had been observed before the attack recorded.

92. **Bardenheuer's Extension Treatment of Fractures of the Leg.**—Schrecker produces convincing testimony as to the value of the Bardenheuer method of extension in treatment of fractures of the leg. The broken bones were restored to normal structure and in nearly every case to normal function. The technic is not so complicated and tedious as generally assumed, although it requires greater attention from the physician than a plaster cast. The results, however, are incomparably better, as he shows by concrete examples and statistics from the Cologne clinic. Entire functional restoration, enabling the laboring man to resume his usual work, required on an average five and one-half months. Of 63 patients treated with extension 91.8 per cent. regained complete functional use of the limb, including 40 who had both bones fractured. Seven of the patients were more or less incapacitated for work, but resumed their occupations. The mechanism of the extension is briefly described. For certain fractures the tip of the foot is suspended from a cord over a pulley directly above, carrying a weight of 2.2 pounds. Traction is also exerted from the side, above and below the fracture, with one weight of about 4.5 pounds on each side, while longitudinal extension is secured with a weight of 22 pounds. The strips of adhesive plaster on each side of the foot are joined beneath, a little below the sole, where the cord is fastened, to insure more even traction on both sides of the foot and to promote absorption in the joints. The technic may be modified to suspend the leg at two or more points. The longitudinal extension draws the stumps of the bone out of their dislodgment in the muscles, and further reduction is seldom necessary. It also reduces the pressure of the stumps on each other and on the periosteum, thus averting a tendency to excessive callus formation. A plaster cast is unable to accomplish this. The pressure of the cast is liable to induce atrophy of the points where it rests and, as they atrophy, the cast becomes loosened. While the limb is being exercised the weights are removed. Bardenheuer lays great stress on the patient's doing the exercising himself, after the first, as he instinctively stops short of the point where pain is induced.

Gazzetta degli Ospedali, Milan.

94 (XXVIII, Nos. 30-36, pp. 305-384.) Diplococcus Aggressins. (Aggressina diplococcica.) A. Barlocco.
95 *Failure of Operative Treatment of Ascites in Cirrhosis of the Liver. (Cirrosi epatica.) G. Caponetto.
96 *Sodium Citrate in Infantile Gastrointestinal Affections. (Citrato di sodio.) L. Miserocchi.
97 *Diagnostic Importance of Auscultation of the Mouth in Pulmonary Tuberculosis. (Rantolo orale.) S. Vallivero.
98 *Diagnostic Significance of Grocco's Triangle in Pleurisy with Effusion. (Triangolo di Grocco.) G. Padoa.
99 Differentiation of Typhoid, Paratyphoid and Miliary Fever. (Tifo, paratifo e lebbre sudorale.) C. S. Materazzi.
100 General Anesthesia with Heroin and Chloroform. (Eroino-cloronarcosi.) P. Volta.
101 *Physical Measures in Treatment of Emphysema of the Lungs. (Enfisema pulmonare.) E. De Renzi.
102 Experimental Study of Pellagra. (Pellagra.) G. Tizzoni.
103 *Favorable Results of Diphtheria Antitoxin in Treatment of Epidemic Cerebrospinal Meningitis. (Meningite cer.-sp. epidemica.) A. Balduzzi.
104 Chemistry of Stomach and Intestines in Hysteria and Epilepsy. (Chimismo gastrico ed intestinale nelle forme convulsive.) A. Borri.

95. **Failure of Operative Treatment of Ascites from Cirrhosis of Liver.**—Caponetto reports extensive experimental research in this line, on dogs, with negative results. All the dogs died after complete occlusion of the portal vein or ligature of the mesenteric alone, irrespective of whether omentopexy was done or not. His clinical experience, he declares, confirms his verdict that successful surgical treatment of the ascites in the cirrhosis of Laennec is an unattainable ideal.

96. **Sodium Citrate in Infantile Gastrointestinal Affections.**—Miserocchi reports favorable results from the use of sodium citrate in sixty-seven cases of gastrointestinal disturbances in young infants. The action of the drug was prompt and effectual, although less marked at first in acute gastroenteritis. He thinks that it facilitates the digestion of various kinds of milk and theorizes to explain the mechanism. He gave a tablespoonful of a mixture of 5 gm. of sodium citrate in 300 gm. of sweetened and sterilized water, after each feeding.

97. **Oral Râles as Sign of Pulmonary Tuberculosis.**—Vallivero reports that he was able to detect Galvagni's "oral râles" in 60 cases of pulmonary tuberculosis while he never discovered them in a large number of cases of other pulmonary affections. Applying the ear to the open mouth, a delicate râle is heard during inspiration or expiration, or both, not corresponding to the pulse nor the movements of swallowing. Galvagni called attention to this sign of tuberculosis as early as 1875, but its importance is not generally recognized. Vallivero affirms that its constant presence at all stages of pulmonary tuberculosis and its constant absence in other pulmonary affections have been abundantly established and certify to its pathognomonic character.

98. **Grocco's Triangle in Pleurisy with Effusion.**—This communication from Grocco's clinic at Florence reviews the various articles that have been published confirmatory of his assertions in regard to the diagnostic value of a triangular area of dulness in the region next to the spine on the side opposite to a pleuritic effusion. This sign was recently discussed with favorable comment in an editorial in THE JOURNAL, Feb. 2, 1907, page 423. Grocco ascribes the area of dulness mainly to the displacement of the organs pushed aside by the pleuritic effusion. The displacement of the anterior portion of the mediastinum causes the "retrosternal sound" of Banti, but the displacement of the posterior portion of the mediastinum causes the triangle of paravertebral dulness described by Grocco. He has found it unmistakable in every case of unilateral pleuritic effusion in his experience, with two exceptions. These were elderly men who had had repeated attacks of pleurisy and pneumonia, and the pleura was probably fastened down by adhesions. The triangular area of dulness was observed in several cases of pneumonia, but in each instance there was a coinciding pleuritic effusion. The triangular area changes its location as the patient changes his position. In case of a double effusion the triangular area is observed on the side opposite the largest effusion, and the area of the dulness decreases in size when the effusion is tapped.

101. **Physical Measures in Treatment of Emphysema of the Lungs.**—De Renzi gives iodin and arsenic and has the patient exercise in a Waldenburg apparatus, breathing in compressed air. In one of the cases described, the lungs have returned to normal size and the expiratory force has risen from forty to ninety-five, while the patient has gained about twenty pounds in weight.

103. **Diphtheria Antitoxin in Epidemic Cerebrospinal Meningitis.**—Balduzzi reports favorable results from the use of diphtheria antitoxin in fifty-nine cases of epidemic cerebrospinal meningitis. It was used for its generic action in stimulating the defensive reactions. This was marked in the cases in which the organism was capable of a response, but in the fulminating cases no benefit was apparent, as the organism did not have time to feel the stimulating action of the serum and produce the defensive substances. The usual dose was 1,000 units. Antistreptococcus serum was also used in a few cases.

Nordiskt Medicinskt Arkiv, Stockholm.

105 (XXXIX, Surgery, Nos. 2-3.) *Influence of Professional Telephoning on the Organism, especially on the Ear. (Einwirkung des berufsmäss. Telephonierens.) N. R. Blegvad.
106 *Treatment of Tuberculosis of the Hip in Children. (Hüftgelenktub. im Kindesalter.) C. M. F. Sinding-Larsen.
107 *Chronic Inflammatory Tumors in Abdominal Cavity. (Tumoren in der Bauchhöhle.) H. Waldenström.
108 (No. 4.) Inflammation around the Intramuscular Tendons (Deltoid). (Peritenitis—Tenalgia—intra-deltoidea.) N. V. Akerblom.
109 Direct Visual Inspection of Esophagus Trachea and Bronchi. (Ueber Oesophago-, Tracheo-, und Bronchoskopie.) E. Schmiegelow.

105. **Influence of the Organism of Professional Telephoning.**—Blegvad found retraction of the tympanic membrane in 26.4 per cent. of 371 telephone girls examined at Copenhagen. This anomaly was observed only in the ear used in telephoning. He found no indications that the hearing was impaired by professional telephoning when previously normal, and neither did he find any evidence that the hearing was rendered more acute. The ear seems to accommodate itself better and better to the work in time, but this, he thinks, is probably because the telephone girls learn to pay less attention to sounds in the environment. There was no evidence to show that professional telephoning could produce an ear affection, but instances were encountered in which an electric shock or sudden noise over the wire aroused a slumbering ear process or induced one. It is important, therefore, that persons with sound ears and normal hearing capacity should be engaged for this work. Anemic, nervous and nervously disposed individuals should be excluded from the telephone service. In a few cases, possibly only in the predisposed, he observed headache and subjective symptoms on the part of the ear, such as pain, pressure, humming in the ears and hyperesthesia. He thinks that the long sitting still, the sudden loud noises coming over the wire and the fact that the operators are generally girls, explain these phenomena. No serious injury has ever been observed at Copenhagen from an electric shock over the wire. He considers the cap receiver worn by the young women as liable to induce acne on the outer ear and itching in the meatus which may lead to eczema, otitis of the outer ear, otomycosis and the like. Its chief disadvantage, however, is that it can not be removed from the ear so quickly as the handreceiver in case of a sudden, unexpected electric shock. The article fills more than 100 pages and concludes with a bibliography.

106. **Treatment of Tuberculosis of Hip in Children.**—Sinding-Larsen is in charge of the seashore sanatorium at Fredriksvärn and in this monograph of 262 pages gives the full clinical histories and details of treatment of 56 boys and 44 girls. Conservative treatment is the rule to the utmost possible extent, before operative measures are attempted, and the patients are kept a long time at the sanatorium, 1,453 days being mentioned in one case. All but 12 of the boys and 6 of the girls were cured, while 5 others still have fistulas.

107. **Chronic Inflammatory Tumors in Abdominal Cavity.**—Waldenström reports three cases of chronic inflammatory tumors in the abdominal cavity. Cocci alone were found in the pus. Hofmeister and Borelius have published each two cases of the kind, but they ascribed theirs to actinomycosis. Waldenström thinks that pyogenic cocci were responsible for the tumors, and that a diagnosis of actinomycosis should not be accepted without discovery of the ray fungus.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

MANUAL OF DISEASES OF THE EYE. For Students and General Practitioners. By Charles H. May, M.D., Chief of Clinic and Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department, Columbia University, New York. Fifth Edition, Revised. Illustrated. Cloth. Pp. 391. Price, $2.00 net. New York: William Wood & Co., 1907.

MEMORIA ANUARIO Correspondiente al Curso Academico de 1905 á 1906. Que se publica en cumplimiento de lo que dispone el articulo 26 del Reglamento Universitario. Paper. Pp. 366. Havana: Manuel Ruiz, S. en C. Imprenta y Papeleria, 1907.

MANUAL OF SURGERY. For Students and Physicians. By Francis T. Stewart, M.D., Professor of Surgery, Philadelphia Polyclinic. Illustrated. Flexible Leather. Pp. 778. Price, $3.50 net. Philadelphia: P. Blakiston's Son & Co., 1907.

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